V12499

SECTION 1 SUMMARY
SECTION 2
CABINET&MAIN FRAME

GoldStar

VHS PAL VIDEO CASSETTE RECORDER

SERVICE MANUAL

CAUTION
BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL

CONTENTS

SECTION 1

IMPORTANT SAFETY PRECAUTIONS
SAFETY CHECK AFTER SERVICING
INTRODUCTION
SPECIFICATIONS
LOCATION OF CUSTOMER CONTROLS

SECTION 2

CABINET DISASSEMBY
CIRCUIT BOARD DISASSEMBLY
EXPLODED VIEWS
- CABINET & MAIN FRAME SECTION
- PACKING ACCESSORY SECTION
- REMOTE CONTROL SECTION

MODEL: GSE-1900P
GSE-1910P
GSE-1920P

GoldStar

CONTENTS

SECTION 1

IMPORTANT SAFETY PRECAUTIONS 1-3

- Precautions during Servicing

SAFETY CHECK AFTER SERVICING 1-4

- Insulation resistance test
- Dielectric strength test
- Clearance distance
- Leakage current test

INTRODUCTION 1-5

SPECIFICATIONS 1-5

LOCATION OF CUSTOMER CONTROLS 1-6

SECTION 2

CABINET DISASSEMBLY 2-1

1. Top Case, Bottom Cover 2-1
2. Front Panel 2-1

CIRCUIT BOARD DISASSEMBLY 2-1

1. Circuit Board Arrangement 2-1
2. Timer/Keyfunction Circuit Board 2-2
3. Main Circuit Board(I)(Y/C, Audio, Tuner/IF, Syscon, Servo) 2-2
4. Pre-Amp Circuit Board 2-2
5. Power Circuit Board 2-2

EXPLODED VIEWS 2-3

1. Cabinet and Main Frame Section 2-3
2. Packing Accessory Section 2-5
3. Remote Control Section 2-6

Important Safety Precautions

Prior to shipment from the factory, the products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

• Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note : Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Use specified internal wiring. Note especially :
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially :
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistor

5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering. (Fig. 1)

6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

7. Check that replaced wires do not contact sharp edged or pointed parts.

8. When a power cord has been replaced, check that 10-15kg of force in any direction will not loosen it. (Fig. 2)

9. Also check areas surrounding repaired locations.

10. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the parts specified. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

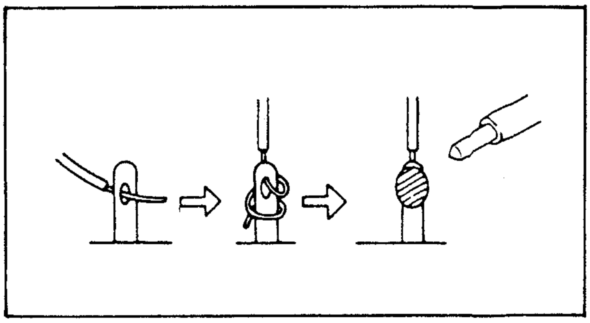


Fig. 1

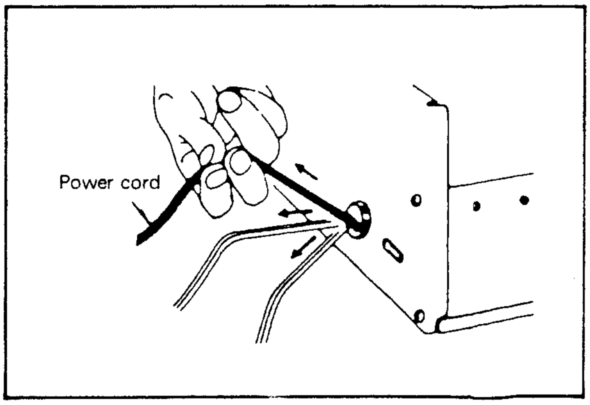


Fig. 2

• Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

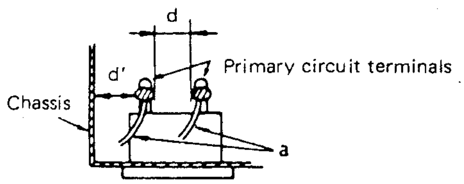


Fig. 3

Table 1 : Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance(d), (d')
*110 to 130 V 200 to 240 V	Europe Australia	≧10 MΩ/500 V DC	4 kV 1 minute	≧ 6mm(d) ≧8mm(d') (a Power cord)

*Class II model only.

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

4. Leakage Current test

Confirm specified or lower leakage current between B(earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)
Insert load Z between B(earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

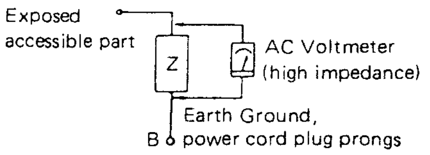


Fig. 4

Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current(i)	Earth Ground (B) to:
100 to 130 V	Europe	2kΩ	i≦0.7m A peak i≦2m A dc	Antenna earth terminals
200 to 240 V	Australia	50kΩ	i≦0.7m A peak i≦2m A dc	Other terminals

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INTRODUCTION

This service manual provides a variety of service information. It contains the mechanical structure of the Video Cassette Recorder(VCR) together with mechanical adjustments and the electronic circuits in schematic form. This VCR was manufactured and assembled under our strict quality control standards and meets or exceeds industry specifications and standards.

SPECIFICATIONS

General

Power Source :	Only : AC 220V, 50/60Hz Dual : AC 110V/220V, 50/60Hz
Power Consumption :	Approx. 25 Watts.
Video Recording System :	2 rotary heads, helical scanning system.
Tape Speed :	23.39mm/sec(SP mode)
Tape Format :	Tape Width 1/2"(12.7mm high density tape VHS).
Maximum Recording Time:	4 hours(With "E-240 type tape).
FF/Rewind Time :	Less than 350sec(With E-180 cassette).
Dimensions(W×H×D)	15.0"×3.4"×13.2"(380×86×335mm)
Weight :	About 13.01lbs(5.9kg)
Operating Temperature :	41°F–95°F(5℃-35℃)
Operating Humidity :	35%-80%
Timer :	24 hours display type.

Video

Television System :	CCIR standard(625 lines, 50 fields). PAL/SECAM Colour signal
Recording Format :	PAL/MESECAM(0st)
RF Reception :	PAL B/G & DDR : SECAM B/G
RF OUT :	PAL G
Input Level :	VIDEO IN(SCART-PIN type, RCA Jack type) 1.0Vp-p, 75ohm, unbalanced
Output Level :	VIDEO OUT(SCART-PIN type, RCA Jack type) 1.0Vp-p, 75ohm, unbalanced
Signal to Noise Ratio :	More than 43dB
RF Modulator :	UHF Channels 32-40(Adjustable).

Audio

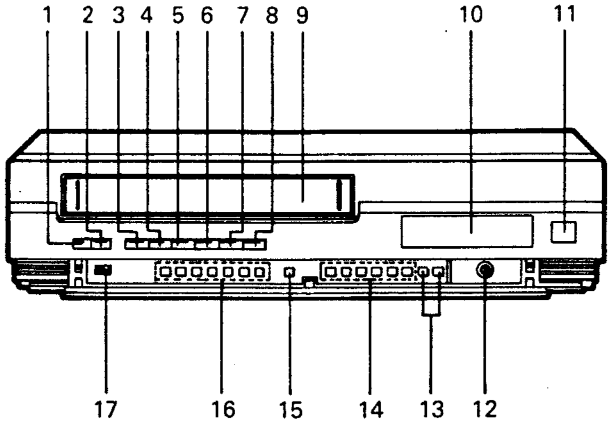
Input Level :	AUDIO IN(SCART-PIN type, RCA Jack type). -8dBm More than 50Kohm.
Output Level :	AUDIO OUT(SCART-PIN type, RCA Jack type) -3dBm Less than 1Kohm.
Audio Track :	Monotrack type
Audio Frequency Response :	100Hz-10kHz($^{-5}_{+3}$)
Signal to Noise Ratio :	More than 40dB

* Designs and specfications are subject to change without notice.

LOCATION OF CUSTOMER CONTROLS

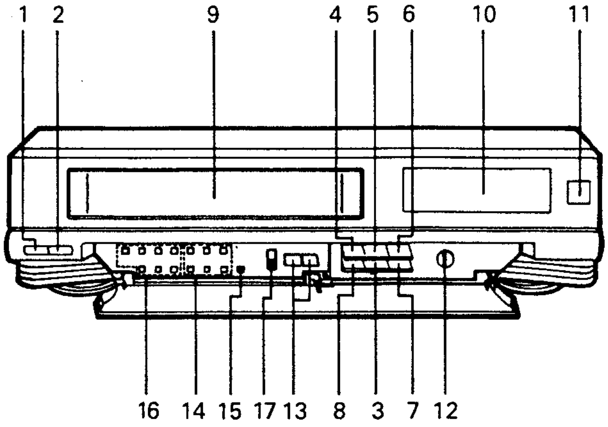
FRONT

MODEL:GSE-1900P


1
2
3
4
5
6
7
8
9
10
11
17
16
15
14
13
12

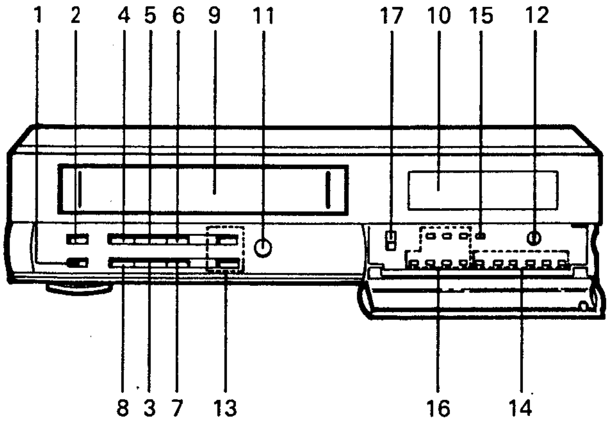
FRONT

MODEL:GSE-1910P

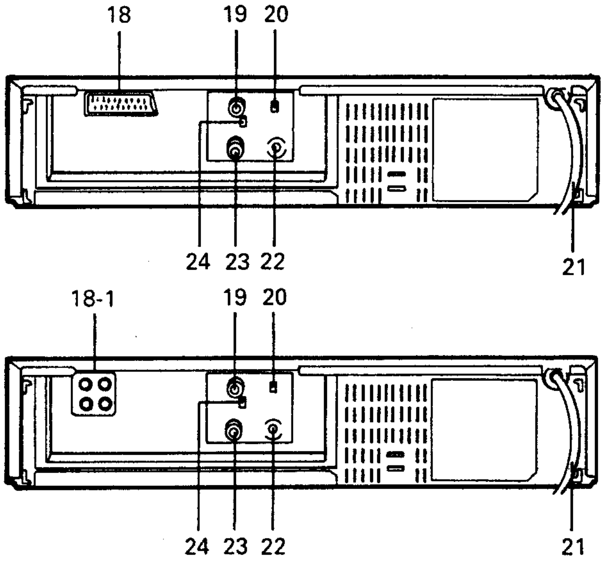

1
2
9
4
5
6
10
11
16
14
15
17
13
8
3
7
12

FRONT

MODEL:GSE-1920P


1
2
4
5
6
9
11
17
10
15
12
8
3
7
13
16
14

REAR

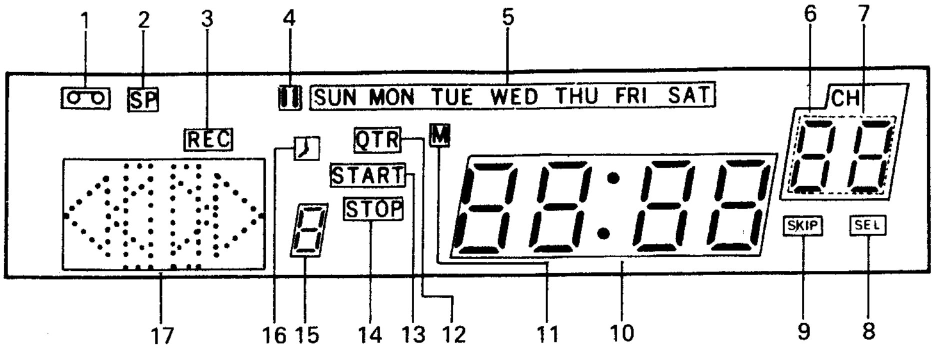

18
19
20
24
23
22
21
18-1
19
20
24
23
22
21

1. OPERATE BUTTON AND INDICATOR
2. EJECT BUTTON
3. STOP BUTTON
4. REWIND/REVIEW BUTTON
5. PLAY BUTTON
6. FAST FORWARD/CUE BUTTON
7. RECORD BUTTON
8. PAUSE/STILL BUTTON
9. CASSETTE COMPARTMENT
10. MULTI-FUNCTION DISPLAY
11. REMOTE SENSOR WINDOW
12. SHARPNESS CONTROL
13. CHANNEL PROGRAMME SELECTORS/ TRACKING(UP/DOWN)
14. CLOCK/TIMER CONTROL BUTTONS
15. QSR BUTTON
16. CHANNEL PRESETTING CONTROLS
17. EDIT SWITCH
18. EURO-AV SOCKET

18-1 AUDIO/VIDEO INPUT/OUTPUT JACKS

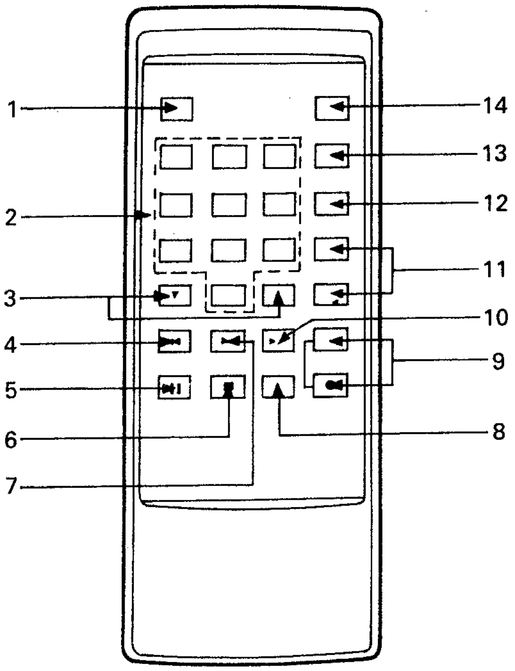
19. AERIAL INPUT
20. TPSG ON/OFF SWITCH
21. MAINS LEAD
22. RF CHANNEL CONTROL
23. RF OUTPUT
24. ATTENNUATION(ATT.) SWITCH

MULTIFUNCTION DISPLAY


1
2
3
4
5
6
7
SP
REC
SUN MON TUE WED THU FRI SAT
CH
QTR
M
START
STOP
88:88
88
SKIP
SEL
17
16
15
14
13
12
11
10
9
8

1. CASSETTE-IN INDICATOR
2. SPEED INDICATOR
3. RECORD INDICATOR
4. WEEK INDICATOR(I, II)
5. DAY INDICATOR(SUN, MOM...SAT)
6. CHANNEL DISPLAY(88)
7. LINE INDICATOR(RU)
8. PRESET INDICATOR(SEL)
9. SKIP INDICATOR(SKIP)
10. SWITCHABLE DISPLAY
11. MEMORY INDICATOR(M)
12. QSR INDICATOR
13. START INDICATOR
14. STOP INDICATOR
15. PROGRAMMING MODE INDICATOR
16. TIMER INDICATOR
17. FUNCTION INDICATOR

REMOTE CONTROL


1
2
3
4
5
6
7
14
13
12
11
10
9
8

1. OPERATE BUTTON
2. NUMBER BUTTONS "0" THROUGH "9"
3. CHANNEL SELECTOR
4. REWIND/REVIEW BUTTON
5. PAUSE/STILL BUTTON
6. STOP BUTTON
7. PALY BUTTON
8. FRAME ADVANCE BUTTON
9. RECORD BUTTONS (TWO BUTTONS ENTRY)
10. FAST FORWARD/CUE BUTTON
11. TRACKING CONTROL BUTTONS
12. TAPE COUNTER RESET BUTTON
13. CLOCK/COUNT BUTTON
14. INPUT SELECT BUTTON(TU/AV)

SECTION 2 CABINET & MAINFRAME

CABINET DISASSEMLBY

1. Top Case Bottom Cover

A. Remove 4 screws(A).(See Fig. 2-1)

B. Hold the backof Top Case and lift it up slightly backward to remove it.

C. Remove 6 scerews(B) to remove the Bottom Cover.(See Fig. 2-1)

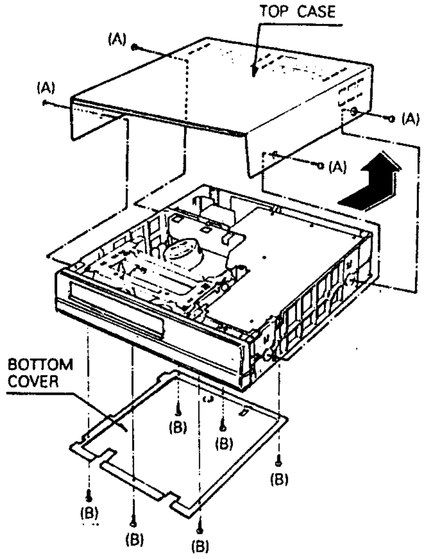

TOP CASE
(A)
(A)
(A)
(A)
BOTTOM COVER
(B)
(B)
(B)
(B)
(B)
(B)

Fig.2-1

2. Front Panel

A. Remove the Top Cover.(See Fig. 2-1)

B. Remove Bottom Cover.(See Fig. 2-1)

C. Remove 3 screws(C) on the top of the Front Panel.

D. Remove the stoppers on the top of the Front Panel.

E. Remove the stoppers on the bottom of the Front Panel.

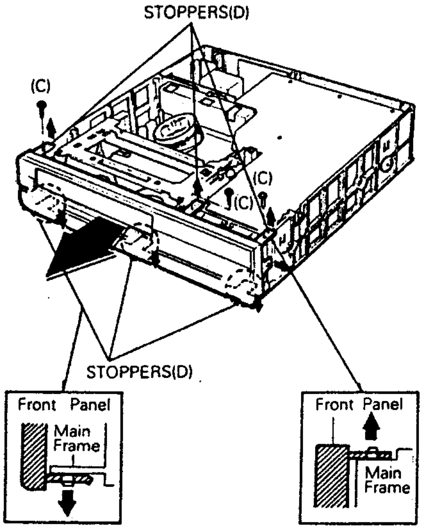

STOPPERS(D)
(C)
(C)
(C)
STOPPERS(D)
Front Panel
Main Frame
Front Panel
Main Frame

Fig.2-2

*** Caution**

When reassembling the Front Panel, assemble it in condition of inserting the Door Cassette inside as shown in Fig. 2-3.

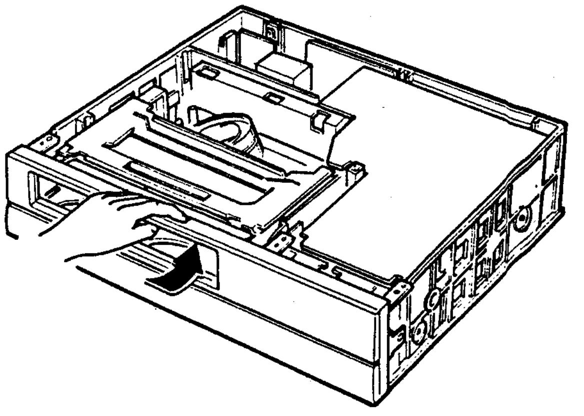


Fig.2-3

CIRCUIT BOARD DISASSEMBLY

1. Circuit Board Arrangement

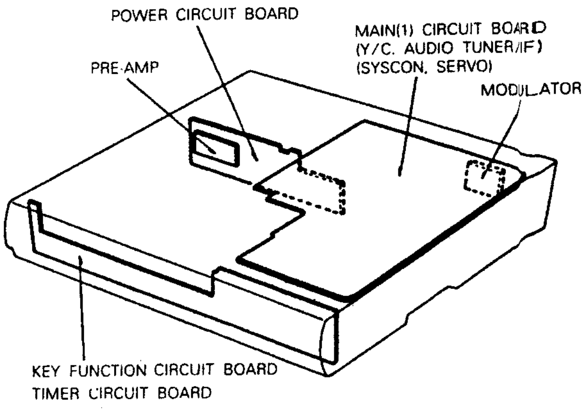

POWER CIRCUIT BOARD
MAIN(1) CIRCUIT BOARD
(Y/C. AUDIO TUNER/IF)
(SYSCON. SERVO)
PRE-AMP
MODULATOR
KEY FUNCTION CIRCUIT BOARD
TIMER CIRCUIT BOARD

Fig.2-4

2. Timer/Key Circuit Board

A. Pull the P.C.Board toward you while pressing 2 stoppers in the direction of the arrows to disengage, and remove the P.C.Board.(See Fig. 2-2)
B. Remove the connector for complete removal.

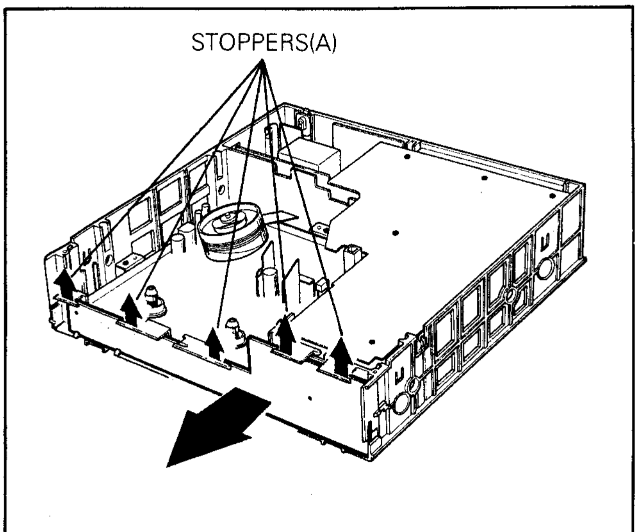


Fig. 2-5

3. Main Circuit Board(I)(Y/C, Audio, Tuner/IF, Syscon, Servo)

A. Remove 2 screws.(C)
B. Lift the rear part up and pull the P.C.Board backward.
C. Remove the connector for complete removal.

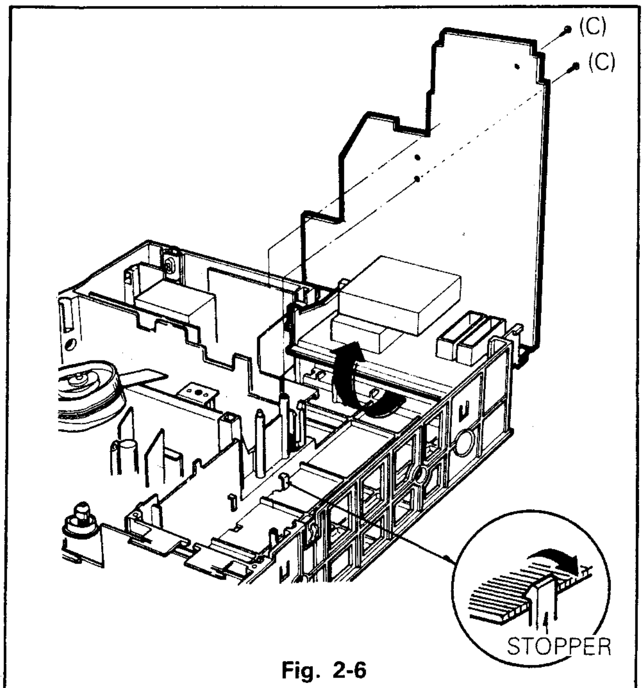


Fig. 2-6

4. Pre-Amp Circuit Board

A. Remove 2 screw.(E)
B. Remove Pre-Amp Package from Main Frame.
C. Remove bracket Pre-Amp from Pre-Amp package.
D. Remove Pre-Amp Circuit Board from Pre-Amp package.

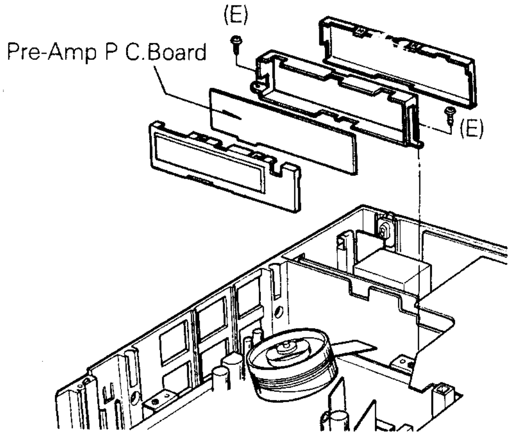


Fig. 2-7

5. Power Circuit Board

A. Remove Main(I) P.C.Board.(See Fig. 2-6)
B. Remove 2 screws(F).

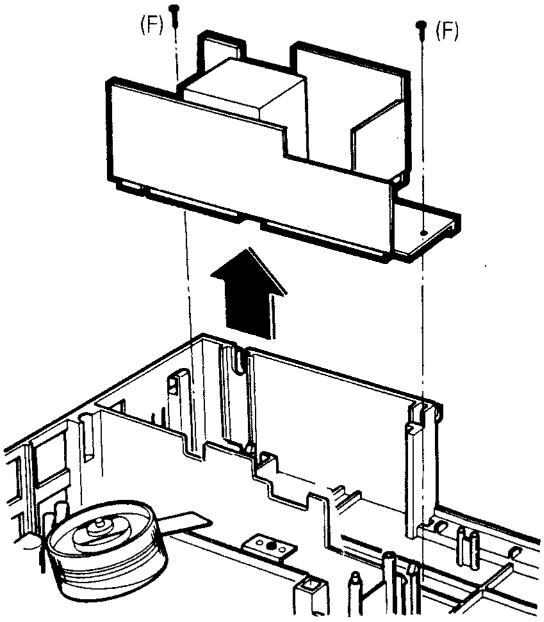
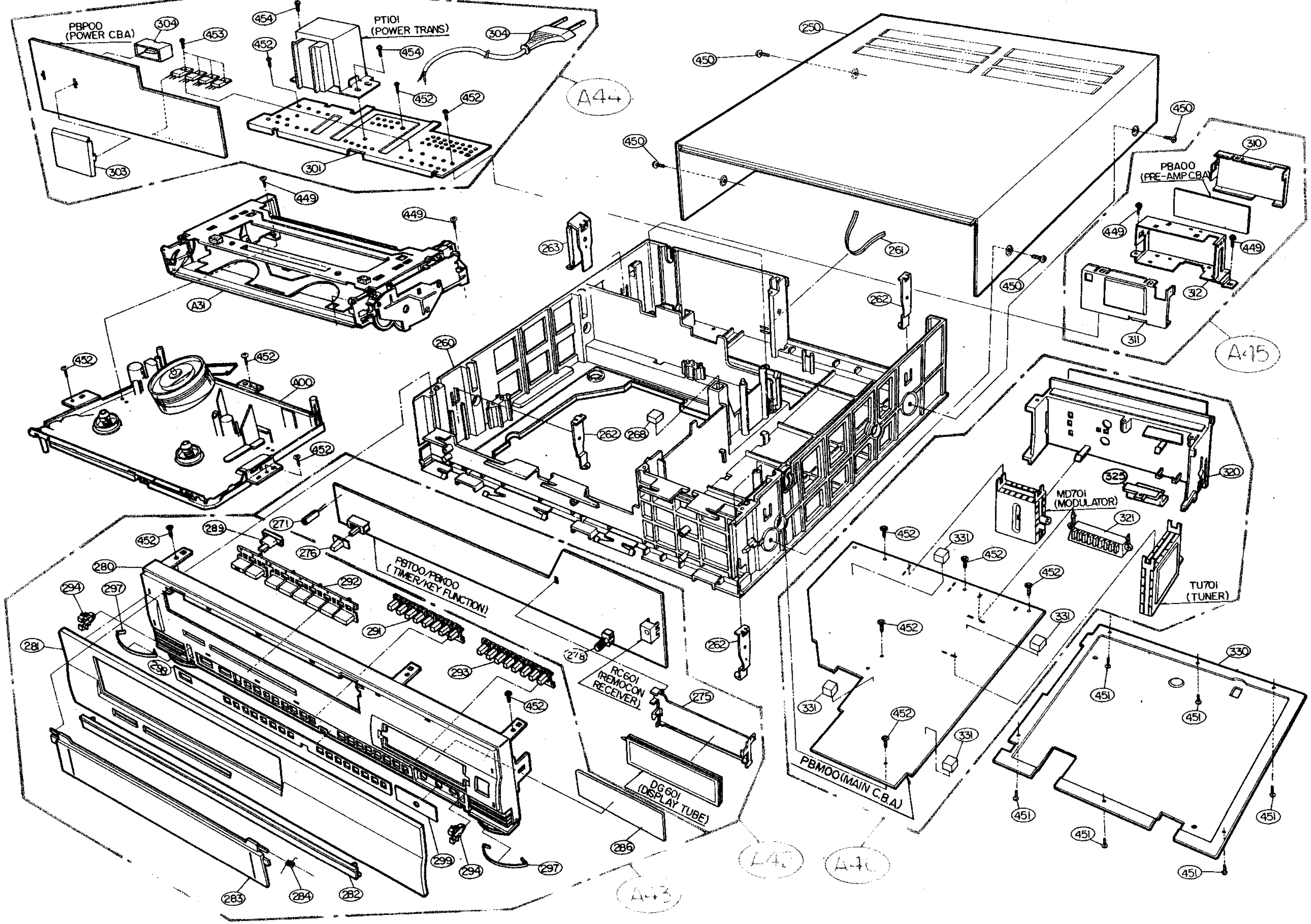


Fig. 2-8

EXPLODED VIEWS

1. Cabinet & Main frame Section

MODEL:GSE-1900P

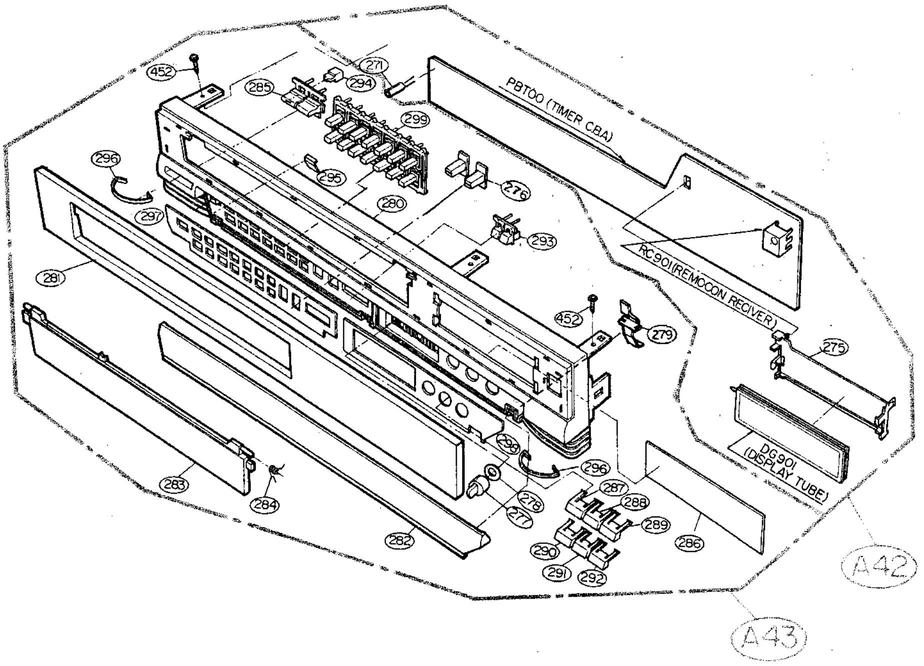


PBP00
(POWER CBA)
PT101
(POWER TRANS)
304
453
454
452
301
303
A44
250
450
449
A31
452
A00
263
261
260
262
268
PBA00
(PRE-AMP CBA)
310
312
311
A45
320
325
MD701
(MODULATOR)
321
TU701
(TUNER)
331
330
451
PBM00(MAIN C.B.A)
A46
289
271
276
PBT00/PBK00
(TIMER/KEY FUNCTION)
292
291
293
278
RC601
(REMOCON
RECEIVER)
275
DG601
(DISPLAY TUBE)
286
280
281
294
297
298
299
283
284
282
A43
A42

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.

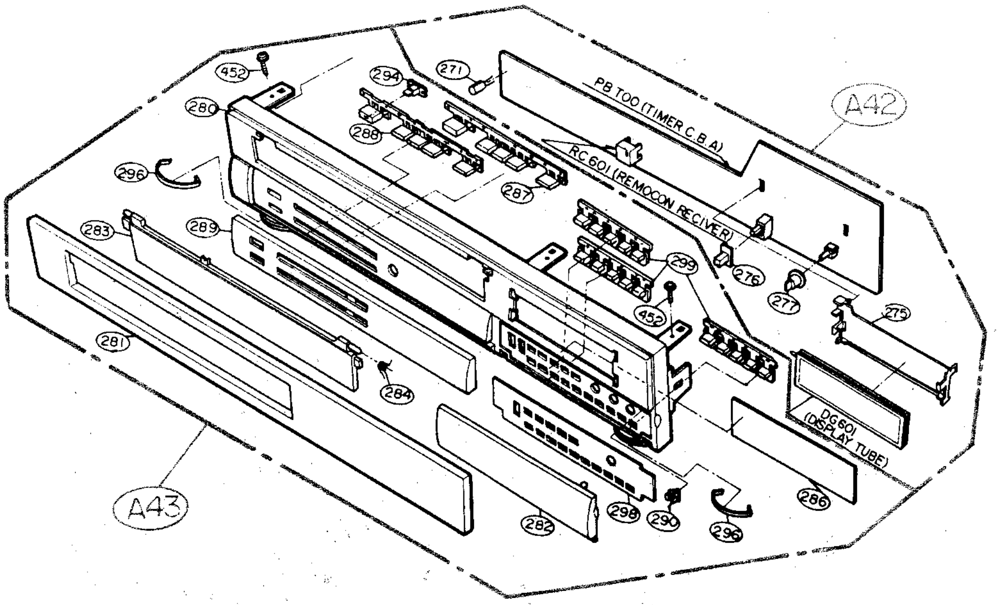
Cabinet & Main Frame Section

MODEL:GSE-1910P

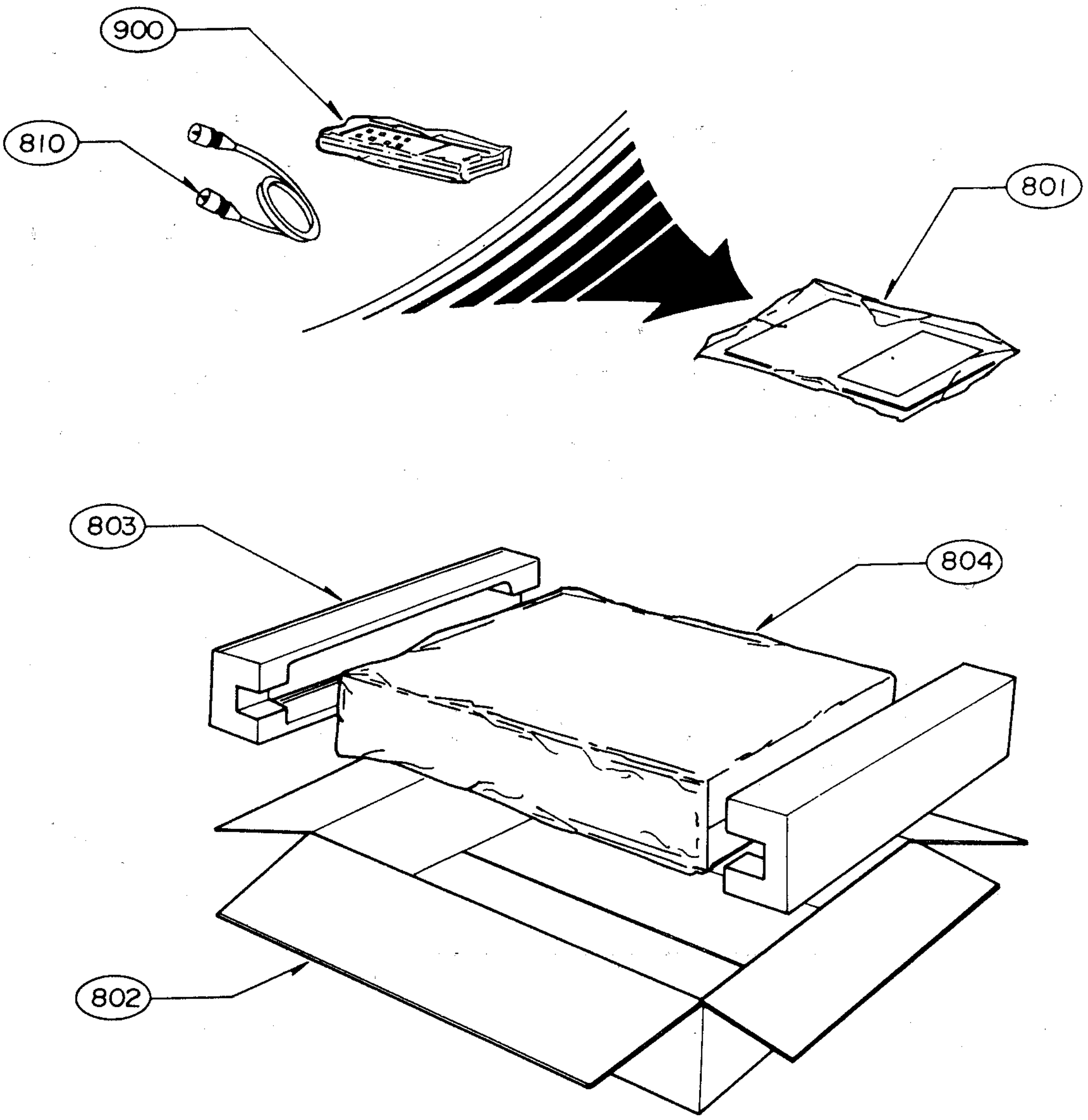

452
271
294
285
299
PBT00 (TIMER CBA)
296
295
276
280
297
293
281
RC901(REMOCON RECIVER)
452
279
275
DG901 (DISPLAY TUBE)
298
296
283
284
278
277
287
288
289
286
290
291
292
282
A42
A43

Cabinet and Main Frame Section

MODEL:GSE-1920P

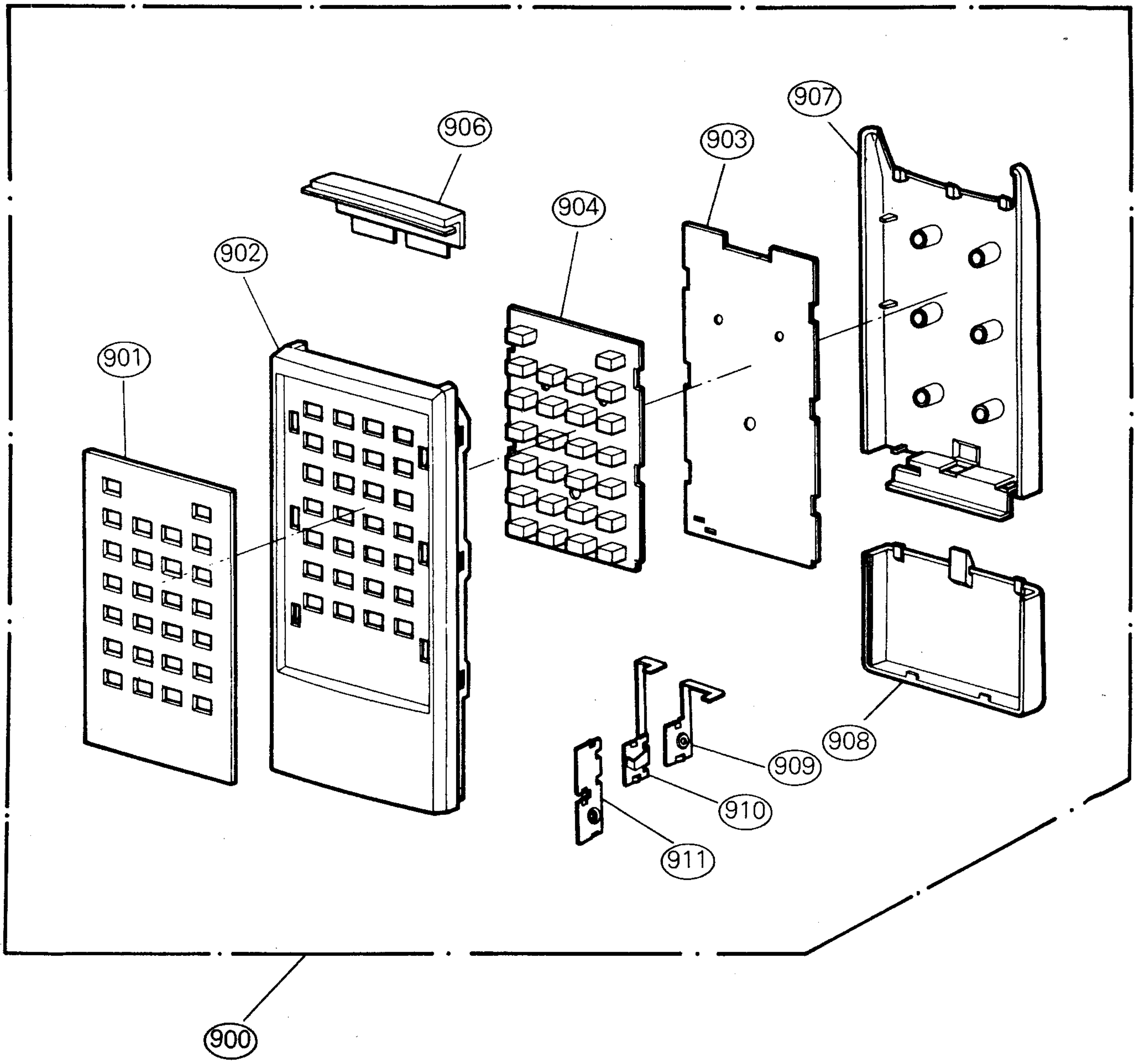

452
294
271
280
PB T00 (TIMER C.B.A)
A42
288
RC601 (REMOCON RECIVER)
296
287
283
289
299
276
277
275
452
281
284
DG601 (DISPLAY TUBE)
A43
298
290
286
282
296

2. Packing Accessory Section


900
810
801
803
804
802

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.

3. Remote Control Section

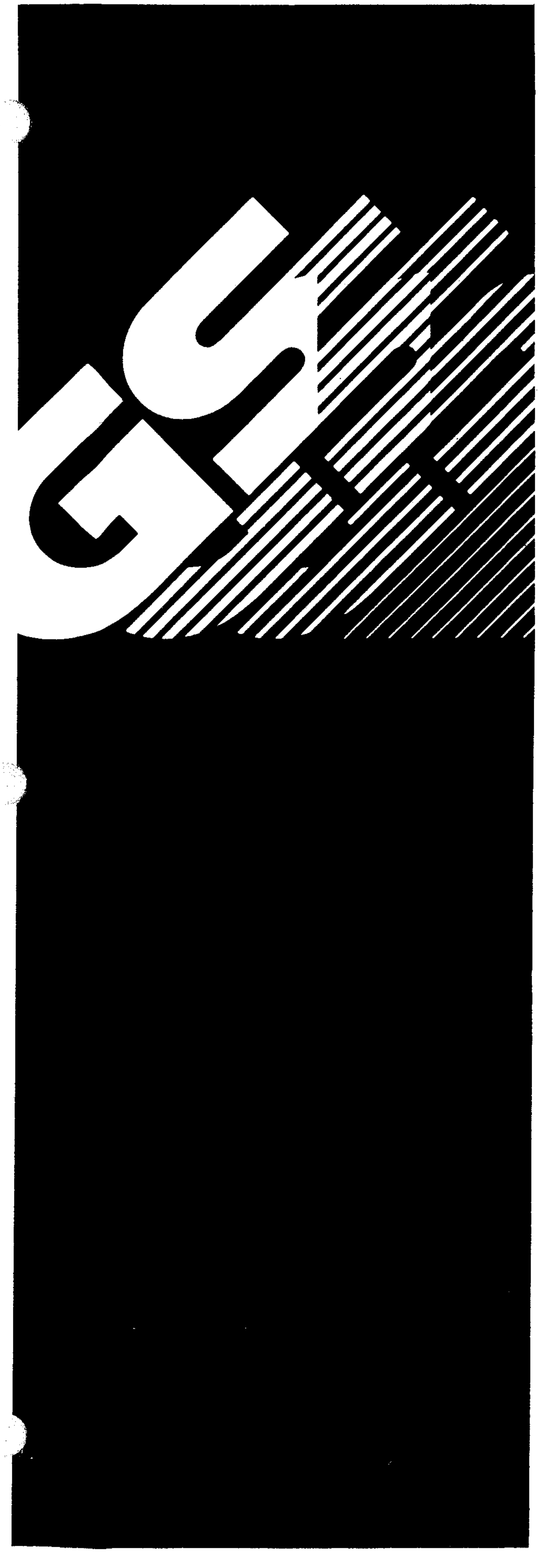

906
907
903
904
902
901
908
909
910
911
900

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST"
in order to look for the part number of each part.

GoldStar

P/N 492-120M

FEB. 1991. Printed in Korea



SECTION 3
ELECTRICAL

GoldStar

VHS PAL VIDEO CASSETTE RECORDER

SERVICE MANUAL

CAUTION

BEFORE SERVICING THE CHASSIS, READ THE"SAFETY PRECAUTIONS" IN THIS MANUAL

CONTENTS

ELECTRICAL ADJUSTMENT PROCEDURES
ELECTRICAL TROUBLESHOOTING GUIDE
BLOCK DIAGRAMS
CIRCUIT DIAGRAMS
PRINTED CIRCUIT BOARD DIAGRAMS

MODEL:GSE-1900P
GSE-1910P
GSE-1920P

GoldStar

CONTENTS

ELECTRICAL ADJUSTMENT POINTS ARRANGEMENT 3-3

Electronic Test Equipment Requirement 3-3

ELECTRICAL ADJUSTMENT PROCEDURES 3-4

1. Servo Circuit 3-4
2. Y/C Circuit 3-4
3. Audio Circuit 3-8
4. Tuner/IF Circuit 3-9

ELECTRICAL TROUBLESHOOTING GUIDE 3-11

1. Power Circuit 3-11
2. Audio Circuit 3-13
3. Y/C Circuit 3-15
4. Syscon Circuit 3-19
5. Servo Circuit 3-22
6. Tuner/IF Circuit 3-26

BLOCK DIAGRAM 3-29

1. Power Block Diagram 3-29
2. Audio Block Diagram 3-31
3. Y/C Block Diagram 3-33
4. Servo/System control Block Diagram 3-35
5. Tuner/IF Block Diagram 3-37
6. Timer Block Diagram 3-39

CIRCUIT DIAGRAM 3-41

1. Power Circuit Diagram 3-41
2. Audio Circuit Diagram 3-43
3. Y/C Circuit Diagram 3-47
4. Servo/System Control Circuit Diagram 3-49
5. Tuner/IF Circuit Diagram 3-53
6. Timer Circuit Diagram 3-55
7. Pre-Amp Circuit Diagram 3-57
8. Connection Circuit Diagram 3-59

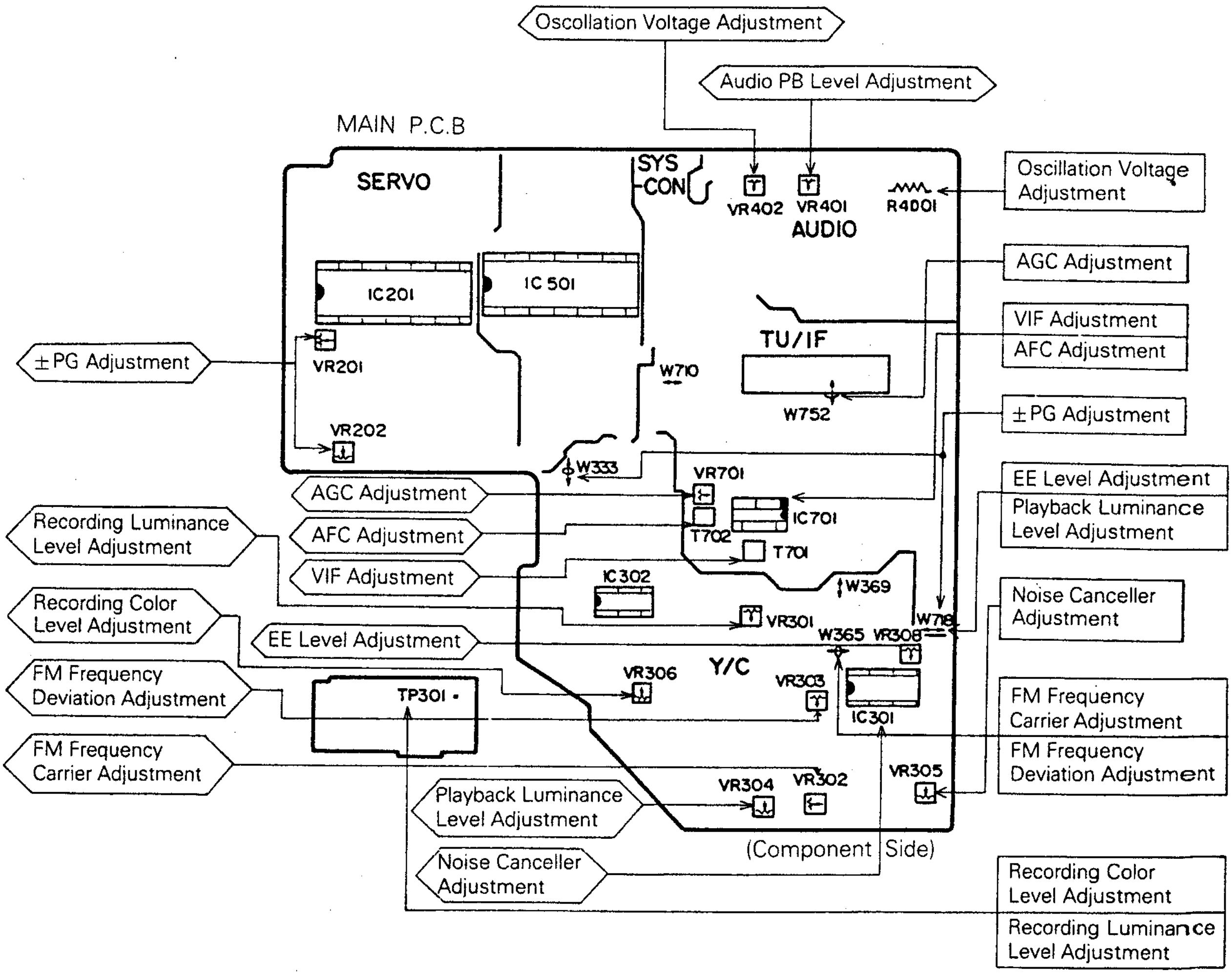
PRINTED CIRCUIT BOARD DAIGRAMS 3-61

1. Main P.C.Board 3-61
2. Power P.C.Board 3-69
3. Pre-Amp P.C.Board 3-69
4. Timer P.C.Board 3-73

ELECTRICAL ADJUSTMENT POINTS ARRANGEMENT

NOTE) ▭ : Measurement Point

⬡ : Adjustment Point



Oscollation Voltage Adjustment
Audio PB Level Adjustment
MAIN P.C.B
SERVO
SYS-CON
VR402
VR401
R4001
AUDIO
Oscillation Voltage Adjustment
IC201
IC 501
AGC Adjustment
VIF Adjustment
AFC Adjustment
±PG Adjustment
VR201
TU/IF
W710
W752
±PG Adjustment
VR202
W333
VR701
EE Level Adjustment
Playback Luminance Level Adjustment
AGC Adjustment
Recording Luminance Level Adjustment
AFC Adjustment
IC701
T702
T701
VIF Adjustment
IC302
W369
Noise Canceller Adjustment
Recording Color Level Adjustment
VR301
W365
VR308
W718
EE Level Adjustment
FM Frequency Deviation Adjustment
TP301
VR306
Y/C
VR303
IC301
FM Frequency Carrier Adjustment
FM Frequency Carrier Adjustment
FM Frequency Deviation Adjustment
VR304
VR302
VR305
Playback Luminance Level Adjustment
(Component Side)
Noise Canceller Adjustment
Recording Color Level Adjustment
Recording Luminance Level Adjustment

Fig. 3-1

Electronic Test Equipment Requirements :

- **Oscilloscope**
- **Video Signal Generator**
- **Modem Tester**
- **Audio Signal Generator**
- **Level Meter**
- **Frequency Counter**
- **D.C power supply**
- **PAL B/G Signal OSD**
- **Sweep & Marker OSC**
- **Monitor Scope**
- **Digital Voltmeter**
- **Digital Multimeter**

ELECTRICAL ADJUSTMENT PROCEDURES

1. Servo Circuit

(1) ±PG Adjustment

MODE	Specification	Adjustment Point	Test Point
PB	6.5H+0.5H	VR201 VR202	W333,W718(VIDEO OUT TERMINAL) W333,W718(VIDEO OUT TERMINAL)

A. Purpose
We perform this procedure for dividing video A/C head phase with 180° and tracing each track exactly to meet head switching point with VHS SPEC.

B. Adjusment Method
- a. Set PAL/SP test tape in PB mode.
- b. Connect CH-1 terminal of oscilloscope to W333 H.SW and CH-2 to Video Out Terminal, W333.
- c. Adjust VR201/VR202 so that the distance from A(B) head selection point of H.SW signal to the starting point of horizontal sinchronized signal is 6.5H(416μsec, 1H=64μsec), while triggering the complex video signal of CH-2, to CH-1 H.SW.
- d. The conversion of A/B Head SW signal uses the Polarity Invert Knob of oscilloscope.

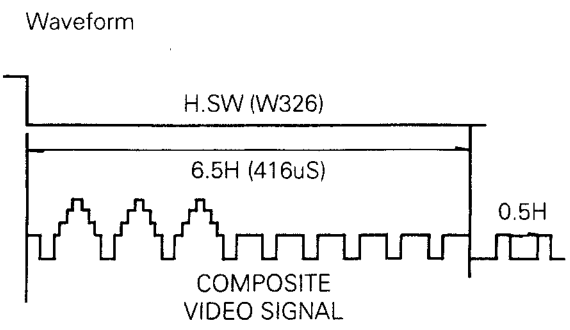


Fig. 3-2

Reference)
1. ±PG adjustment is practiced in the state of the RF level being maximum and the locked Servo System.
2. The location difference of A/B Head adjustment should ve within ±0.5H(32μsec).
3. The Adjustment Spec. and the Practice Difference should be within ±0.5H(32μsec).
4. Oscilloscope and VCR set should connecto GND.

2. Y/C Circuit

1) EE Level Adjustment

MODE	Specification	Adjustment Point	Test Point
STOP	1.0Vp-p±0.1Vp-p	VR308	W718, TP302

A. Connect CH-1 of the oscilloscope to W718.
B. Connect the Video Signal generator to Video In Jack of the VCR.
C. Measure the value from the lower end of synchronized signal to 100% white signal.

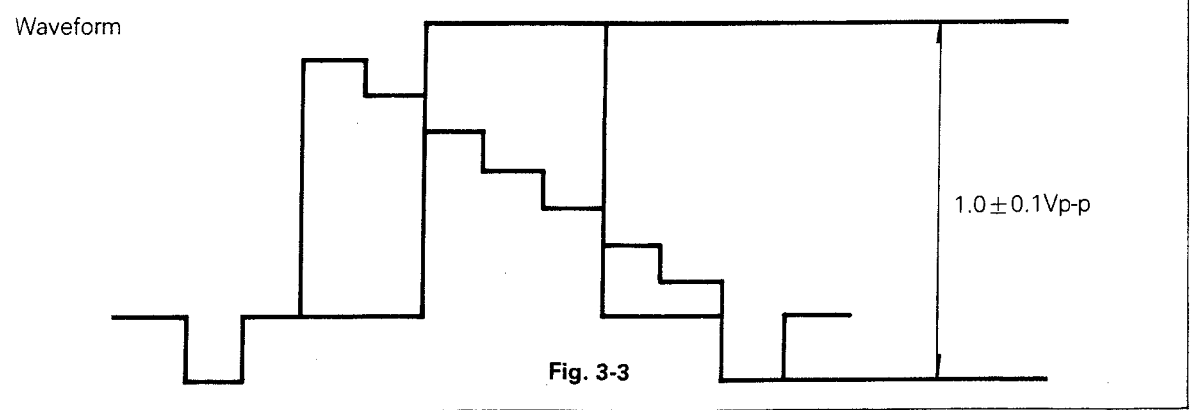


Fig. 3-3

(2) FM Frequency Carrier Adjustment

MODE	Specification	Adjustment Point	Test Point
REC	White Peak : 4.8±0.1MHz Sync Tip : 3.8±0.1MHz	VR302	W365

A. Connect CH-1 of oscilloscope to Output Jack of Modem Tester.

B. Connect Input Jack of Modem Tester to W365.(The VCR and the Modem Tester should be connected with 1:1 Probe.)

C. Connect the Video Signal Generator to Video In Jack of the VCR.

D. The terminal of the Modem Tester should be position at ATT OdB, PAL mode, Demod and Marker On.

※ POSITION OF MODEM TESTER TERMINAL

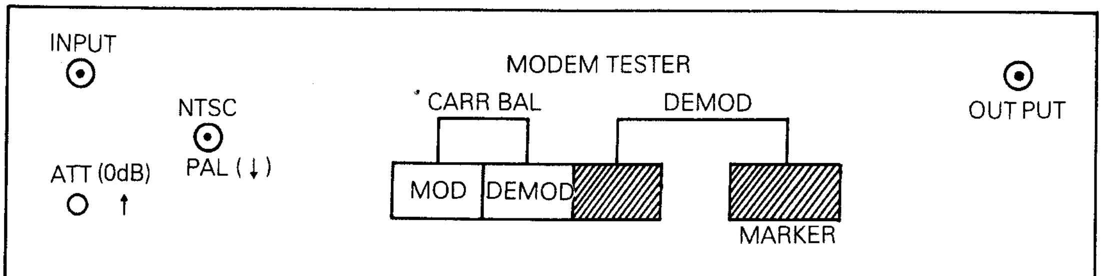


Fig. 3-4

E. Adjust VR302 so that 3.8MHz marker on the oscilloscope accords with the lower end of Sync.

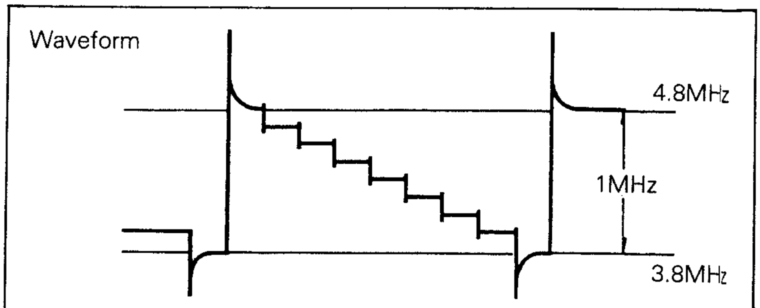


Fig. 3-5

(3) FM Frequency Deviation Adjustment

MODE	Specification	Adjustment Point	Test Point
REC	1±0.1MHz	VR303	W365

A. Connect CH-1 of oscilloscope to Output Jack of Modem Tester.

B. Connect Input Jack of Modem Tester to W365.(The VCR and the Modem Tester should be connected with 1;1 Probe.)

C. Connect the Video Signal Generator to Video In Jack of the VCR

D. The terminal of the Modem Tester should be position at ATT 0dB, PAL mode, Demode and Marker On(Refer to Fig. 3-4).

E. Adjust VR303 so that 3.8MHz marker on the oscilloscope accords with the lower end of Sync, and 4.8MHz marker on the oscilloscope, the white Peak signal.(Refer to Fig. 3-5).

(4) Recording Color Level Adjustment

MODE	Specification	Adjustment Point	Test Point
REC	30^{+5}_{-2} mVp-p	VR306	TP301

A. Connect CH-1 of oscilloscope to TP301.
B. Connect the Video Signal Generator to Video In Jack of the VCR.
C. Minimise the FM Y REC current by VR301.
D. Adjust VR306 so that the color REC current value from TP001 to be 30mVp-p.

Waveform

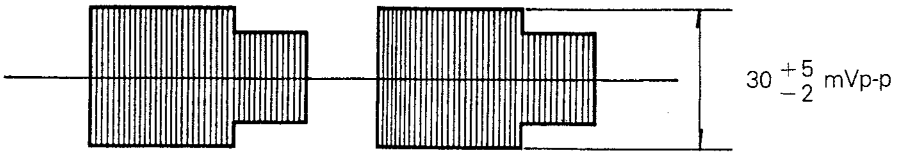


Fig. 3-6

(5) Recording Luminance Level Adjustment

MODE	Specification	Adjustment Point	Test Point
REC	140±5mVp-p	VR301	TP301

A. Connect CH-1 of oscilloscope to TP301.
B. Connect the Video Signal Generator to Video In Jack of the VCR.
C. Measure the value of TP001

Waveform

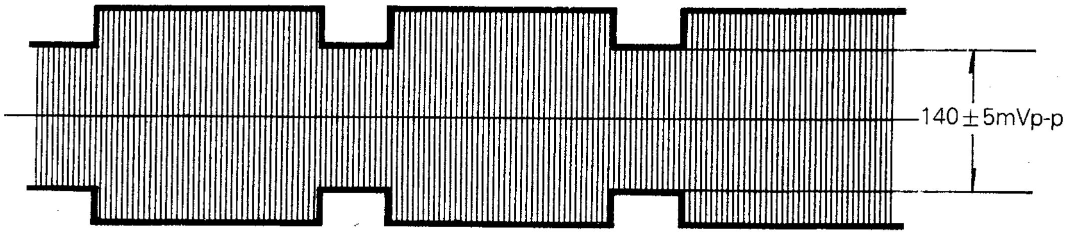


Fig. 3-7

(6) Playback Luminance Level Adjustment

MODE	Specification	Adjustment Point	Test Point
PB	1±0.1Vp-p	VR304	W718

A. Connect CH-1 of oscilloscope to W718.
B. Connect the Video Signal Generato to Video In Jack of the VCR.
C. Playback an alignment tape.(including 100% white signal)
D. Adjust VR304 so that Video waveform is 1Vp-p.

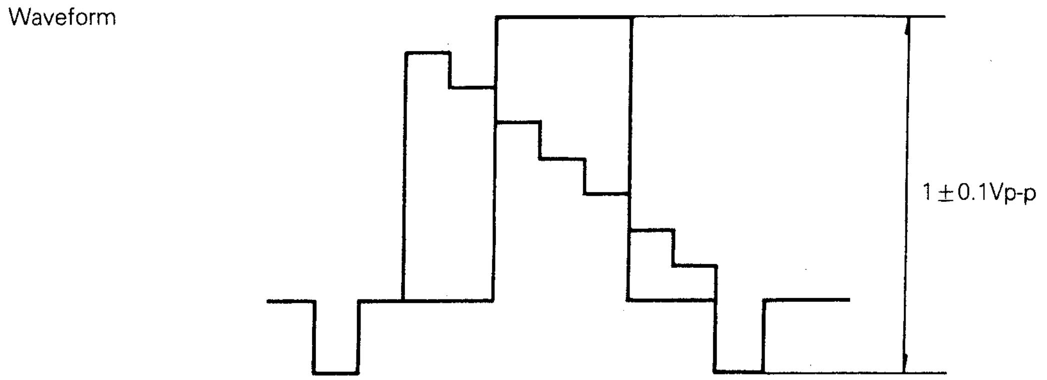

Waveform
1±0.1Vp-p

Fig. 3-8

(7) Noise Canceller Adjustment

MODE	Specification	Adjustment Point	Test Point
PB	Refer to Fig. 3-9	VR305	IC301 pin ⑨ IC301 pin ⑩

A. Connect CH-1 of oscilloscope to IC301 Pin ⑨.
B. Connect CH-2 of oscilloscope to IC301 Pin⑩.
C. Playback a SP alignment tape(including 100% white signal).
D. Adjust VR305 so that the Video waveform of IC301 Pin ⑨ and IC301 Pin ⑩ are same with each other.

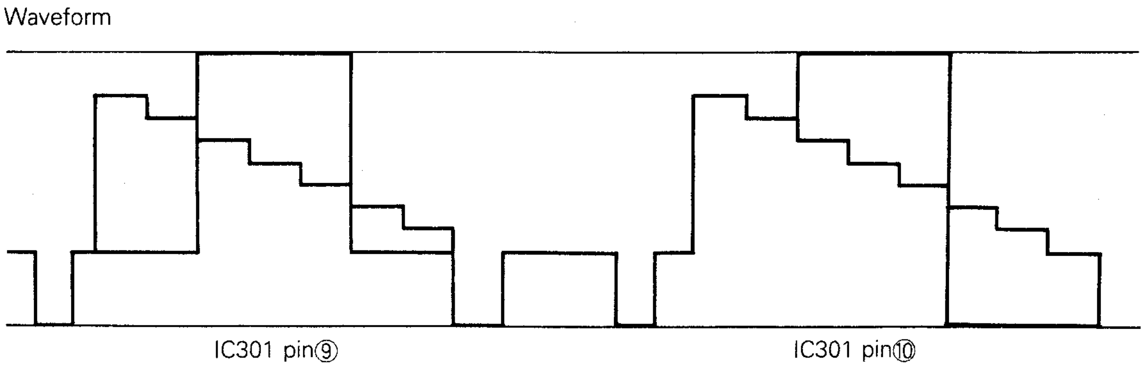

Waveform
IC301 pin⑨
IC301 pin⑩
REFERENCE LEVEL
ADJUSTMENT LEVEL

Fig. 3-9

3. Audio Circuit

(1) Audio PB Level Adjustment

MODE	Specification	Adjustment Point	Measurement Point
PB	–3±1.5dBm –5±1.5dBm (1KHz)	VR401	Audio Out Jack

A. Purpose
We perform this procedure for adjusting Audio PB Level to its spec.

B. Adjustment Method

a. Playback an alignment tape.

b. Adjust VR401 so that 1kHz output level of level meter is –3±1.5dBm in case of SCART, –5±1.5dBm in case of RCA.

c. At this time, while adjusting the R/P Head Azimuth, make 6kHz level be maximum

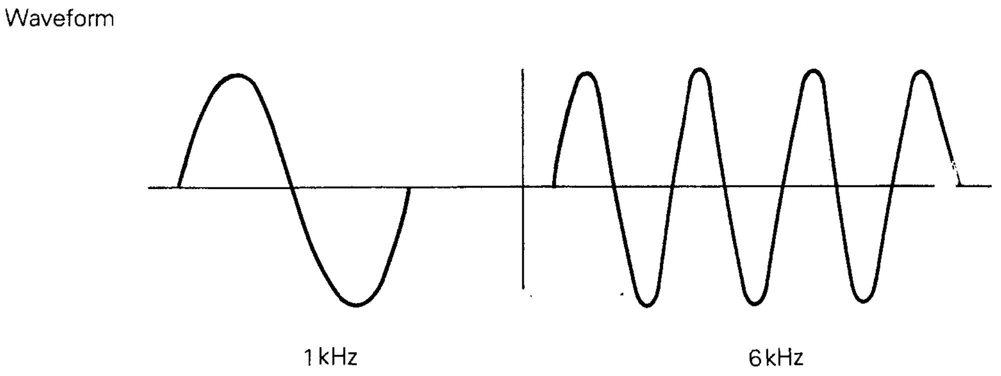


Fig. 3-10

(2) Oscillation Voltage Adjustment

MODE	Specification	Adjustment Point	Test Point
Record	2.2mV RMS	VR 402	R4D01 both terminal

A. This is for adjusting the Bias current to SPEC in recording.

B. Adjustment Method

a. Connect CH-1 of the oscilloscope to R4D01.

b. Connect the Level Meter to R4D01.

c. Confirm that the oscillation voltage is 2.2mVrms to connect the level meter terminal to both terminals of R4D01 during recording.

d. At this time, adjust VR402 and make the oscillation voltage fit to SPEC.

4. Tuner/IF Circuit

(1) VIF Adjustment

MODE	Specification	Adjustment Point	Test Point
EE (without signal)	Refer to Fig.3-11	T701	IC701 Pin⑭

A. Connect as shown in Fig. 3-12.
B. Attenuate the Sweep OSC Gain by 25±5dB.
C. Apply DC12V to Pin② of Tuner MB Terminal.
D. Apply DC 9.5±0.5V to pin ⑧ of IC707.
E. Adjust T701 so that the waveform of monitor is same as Fig. 3-11.

*** Caution in Adjustment**

1. The cable connected to Sweep OSC·Mointor scope should be within 50cm.
2. The Cable VSWR should be within 2.

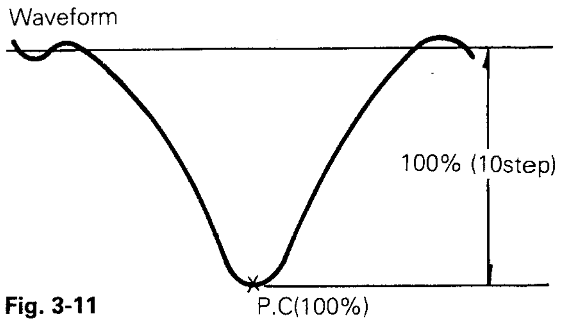


Fig. 3-11

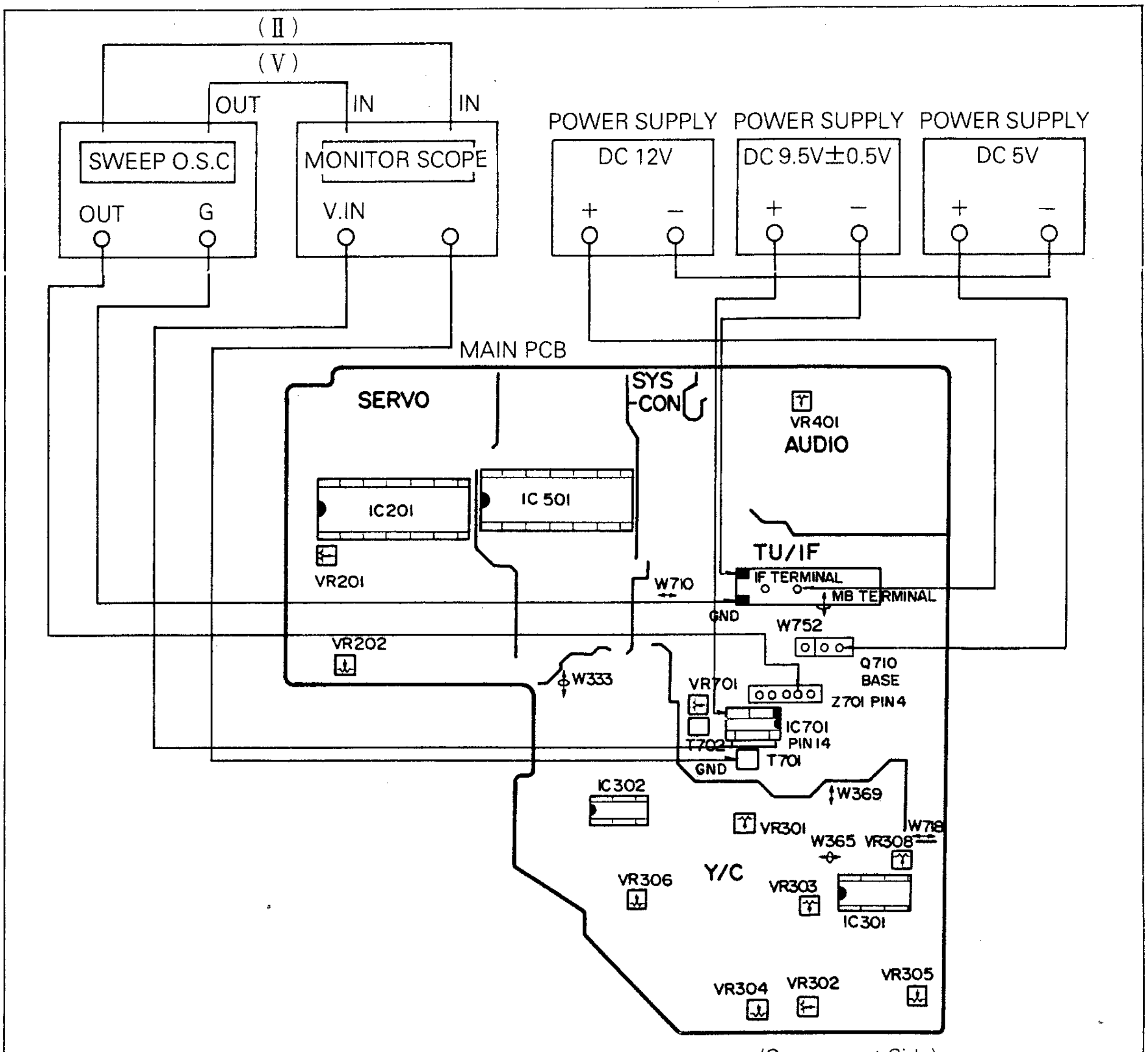

(Ⅱ)
(V)
OUT
IN
IN
SWEEP O.S.C
OUT
G
MONITOR SCOPE
V.IN
POWER SUPPLY
DC 12V
+
−
POWER SUPPLY
DC 9.5V±0.5V
+
−
POWER SUPPLY
DC 5V
+
−
MAIN PCB
SERVO
SYS CON
VR401
AUDIO
IC201
IC 501
VR201
TU/IF
IF TERMINAL
MB TERMINAL
W710
GND
W752
VR202
Q710 BASE
W333
VR701
Z701 PIN4
IC701 PIN14
T702
T701
GND
IC302
W369
VR301
W718
W365
VR308
VR306
Y/C
VR303
IC301
VR304
VR302
VR305
(Component Side)

Fig. 3-12

(2) AFC Adjustment

MODE	Specification	Adjustment Point	Test Point
EE (without signal)	Refer to Fig.3-13	T702	IC701 Pin⑪

A. Connect as shown in Fig. 3-12.
B. Attenuate the Sweep OSC Gain by 25±5dB.
C. Apply DC 12V to Tuner MB Terminal.
D. Apply DC 9.5V±0.5V from IC701 Pin⑧.
E. Apply DC 5V to Q710 Base.
F. Connect the Monitor Scope as shown in Fig. 3-12.
G. Adjust T702 so that the waveform of monitor is same as Fig. 3-13.

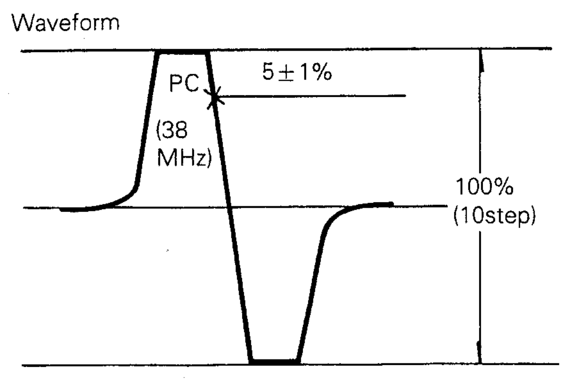


Fig. 3-13

(3) AGC Adjustment

MODE	Specification	Adjustment Point	Test Point
CH (Normal Reception)	5.5V±0.1V	VR701	W752

A. Connect as shown in Fig. 3-12.
B. Tune CH-9 whose input electric field is 60dBμ ±1dBμ.
C. Connect the Digital Voltmeter to W752.
D. Adjust VR701 so that the Digital Voltmeter is 5.5V ±0.1V.

*** Reference**

1. VIF and AFC adjustment are performed in the jig state, and is not performed in the assembling line.
2. Maintain the Input Gain Fully in adjusting AGC.

*** Caution in testing**

1. When practicing this adjustment, adjust after more than 20minutes with TV set turning on.
2. Adjust after completing itself test of measuring apparatus.
3. Sweep osc Marker frequency is followed by Table.1.

*** Abbreviation**

- APC:Adjacent picture carrier
- SIF:Sound Intermediate Frequency
- CIF:Color Intermediate Frequency
- CEN:Center Frequency
- PIF:Picture Intermediate Frequency
- ASC:Adjacent Sound Carrier

〈Table 1〉 Frequency Table

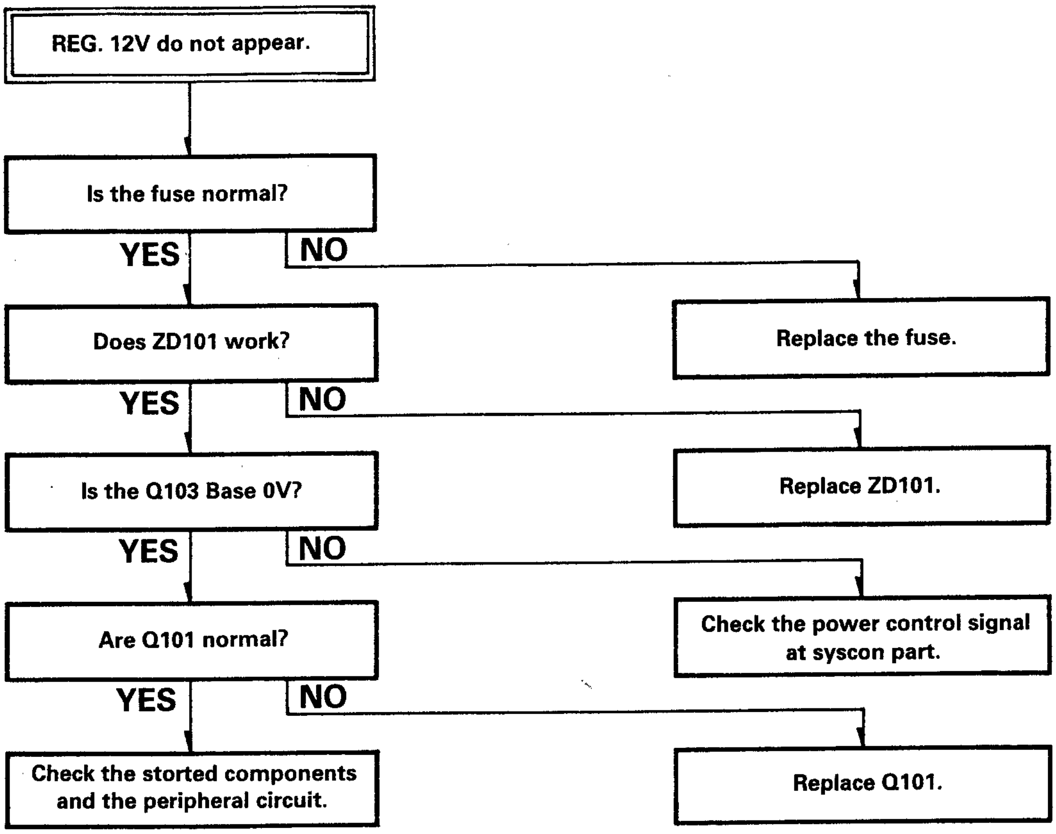
(MHz)

TABLE ADDRESS	1	2	3	4	5	6
FREQUENCY	29 50	32.50	33.57	36.00	38 00	40.40
MARKER NAME	APC	SIF	CIF	CEN	PIF	ASC

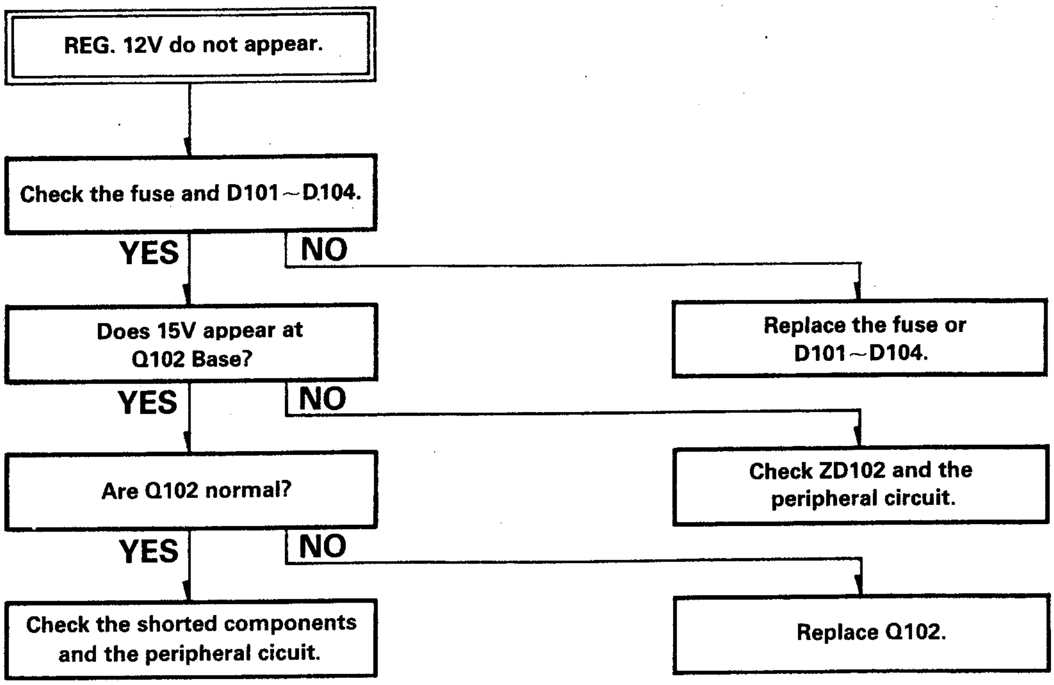
ELECTRICAL TROUBLESHOOTING GUIDE

1. Power Circuit

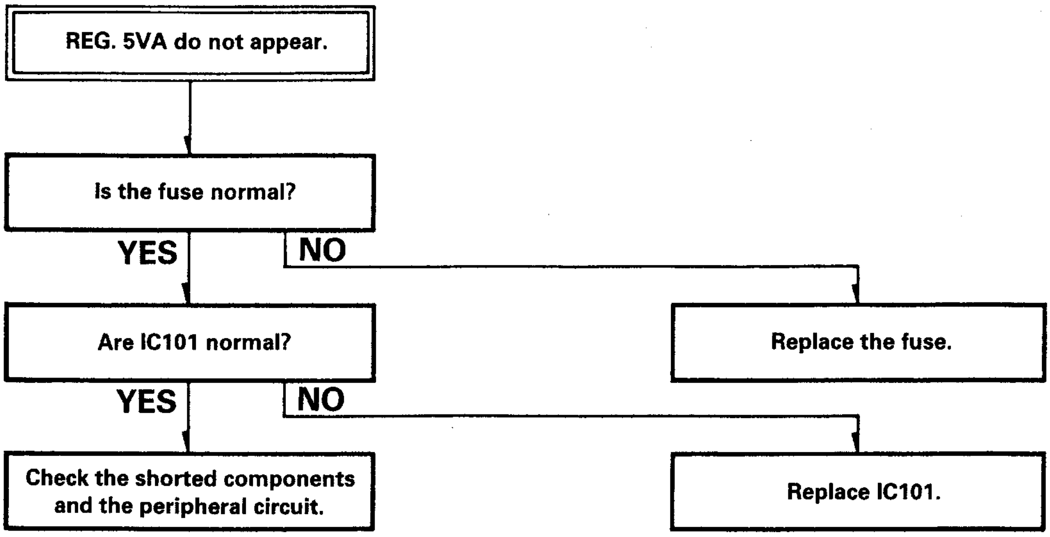
A.


REG. 12V do not appear.
Is the fuse normal?
YES
NO
Replace the fuse.
Does ZD101 work?
YES
NO
Replace ZD101.
Is the Q103 Base 0V?
YES
NO
Check the power control signal at syscon part.
Are Q101 normal?
YES
NO
Replace Q101.
Check the storted components and the peripheral circuit.

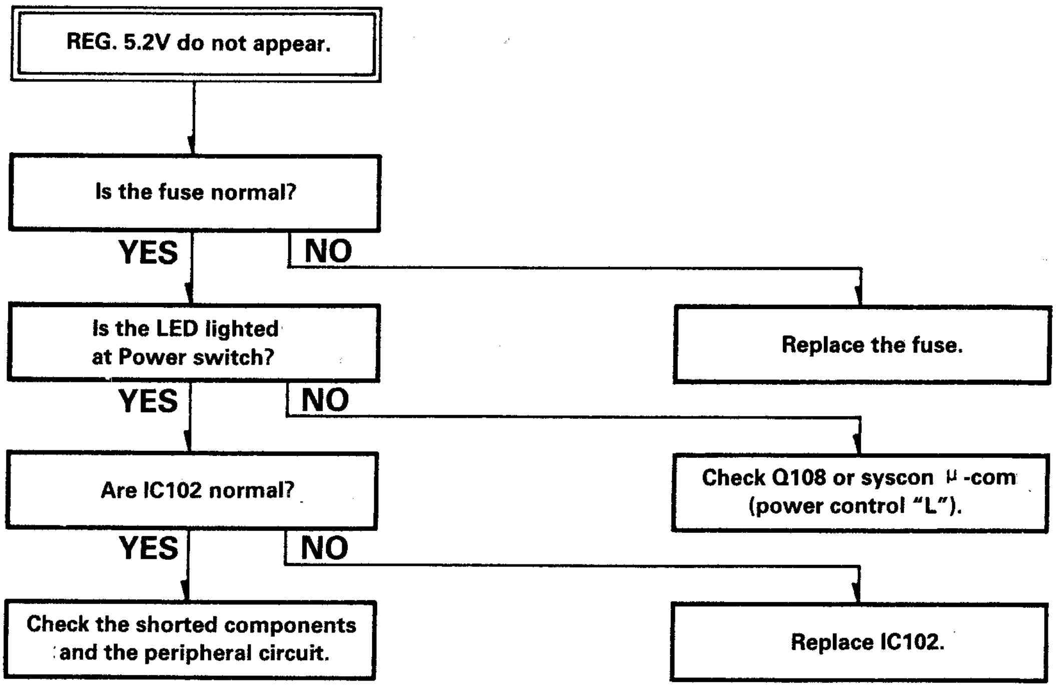
B.


REG. 12V do not appear.
Check the fuse and D101~D104.
YES
NO
Replace the fuse or D101~D104.
Does 15V appear at Q102 Base?
YES
NO
Check ZD102 and the peripheral circuit.
Are Q102 normal?
YES
NO
Replace Q102.
Check the shorted components and the peripheral cicuit.

C.

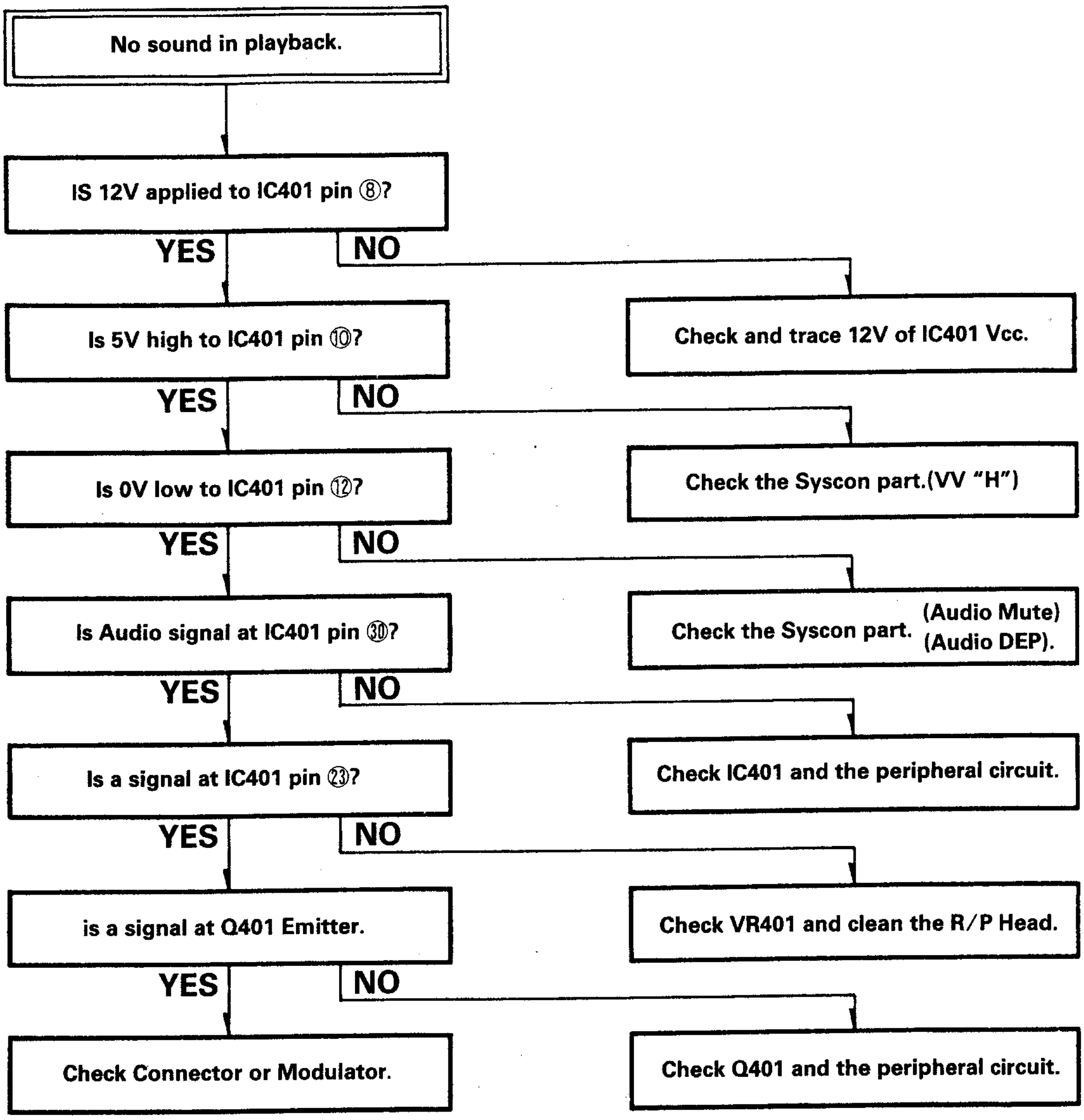

REG. 5VA do not appear.
Is the fuse normal?
YES
NO
Are IC101 normal?
Replace the fuse.
YES
NO
Check the shorted components and the peripheral circuit.
Replace IC101.

D.

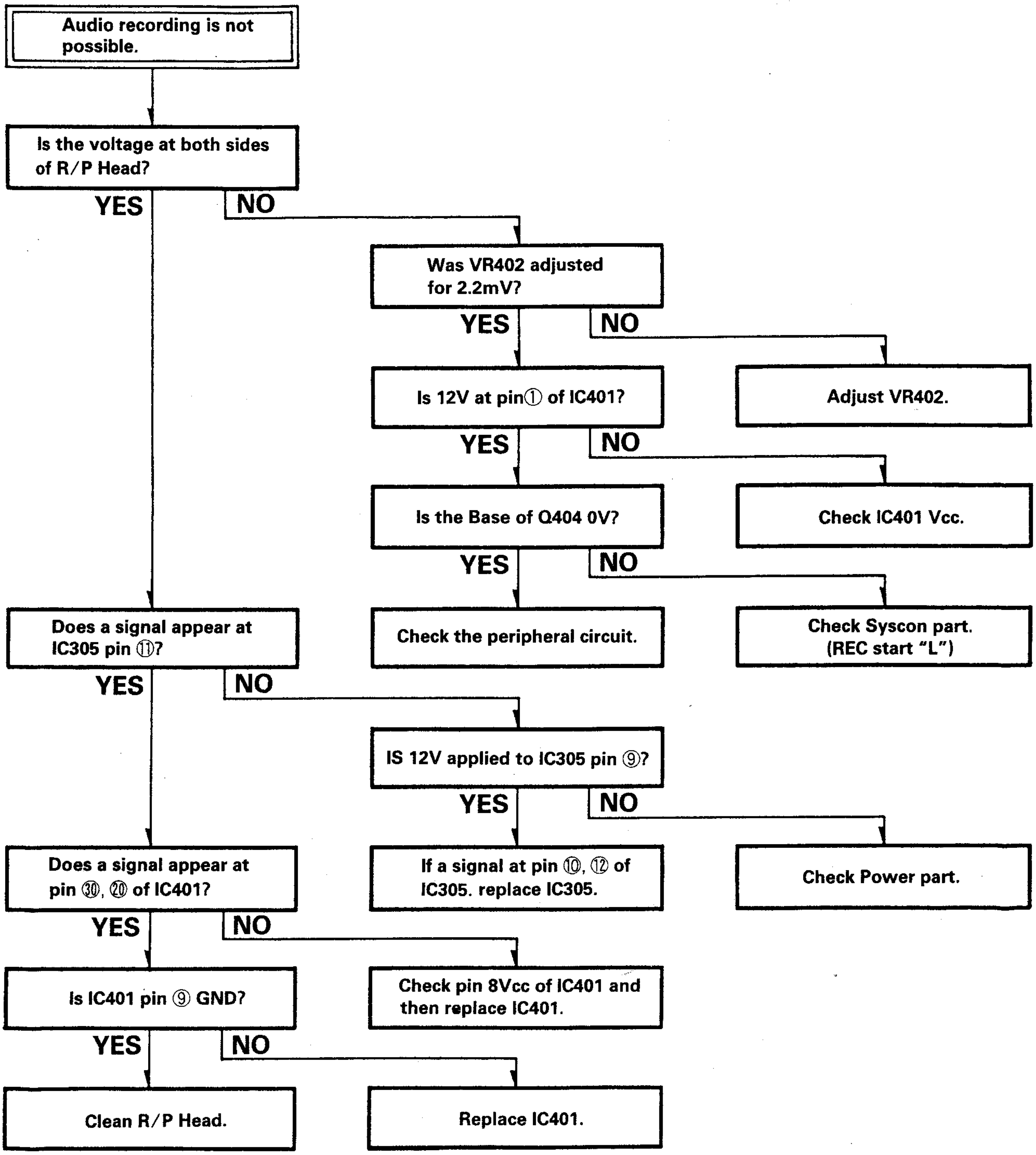

REG. 5.2V do not appear.
Is the fuse normal?
YES
NO
Is the LED lighted at Power switch?
Replace the fuse.
YES
NO
Are IC102 normal?
Check Q108 or syscon µ-com (power control "L").
YES
NO
Check the shorted components and the peripheral circuit.
Replace IC102.

2. Audio Circuit

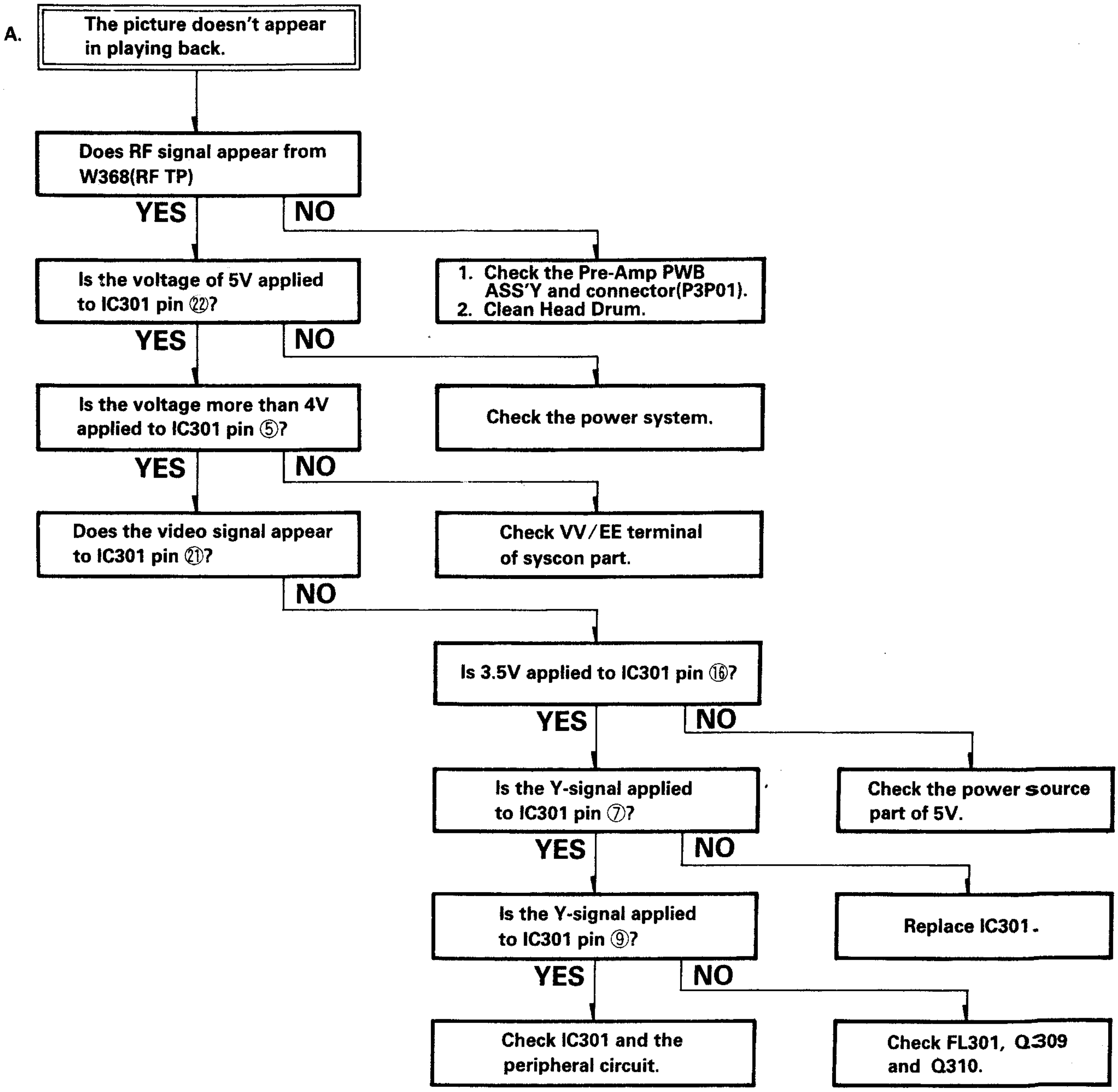
A.

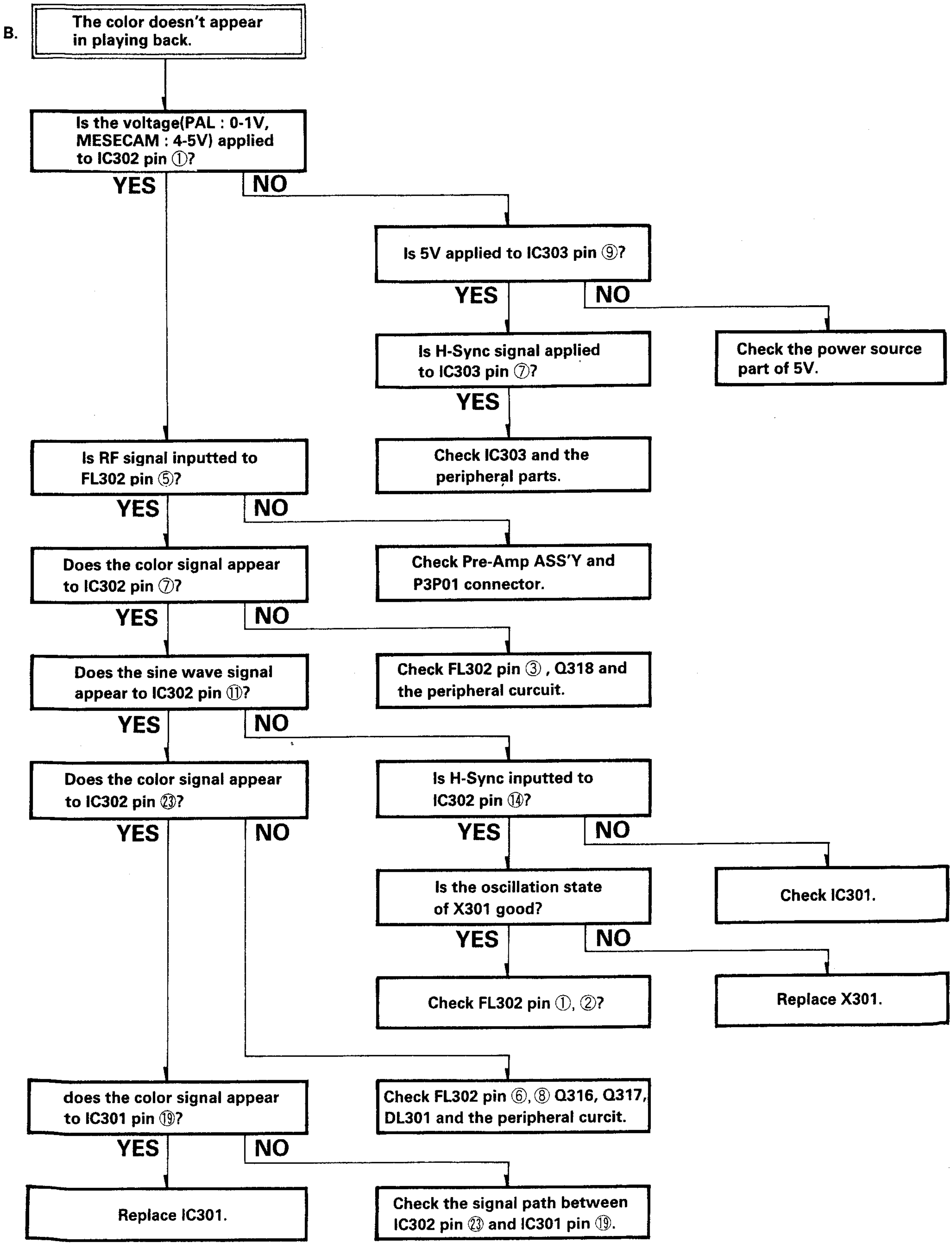

No sound in playback.
IS 12V applied to IC401 pin ⑧?
YES
NO
Check and trace 12V of IC401 Vcc.
Is 5V high to IC401 pin ⑩?
YES
NO
Check the Syscon part.(VV "H")
Is 0V low to IC401 pin ⑫?
YES
NO
Check the Syscon part. (Audio Mute) (Audio DEP).
Is Audio signal at IC401 pin ㉚?
YES
NO
Check IC401 and the peripheral circuit.
Is a signal at IC401 pin ㉓?
YES
NO
Check VR401 and clean the R/P Head.
is a signal at Q401 Emitter.
YES
NO
Check Connector or Modulator.
Check Q401 and the peripheral circuit.

B.

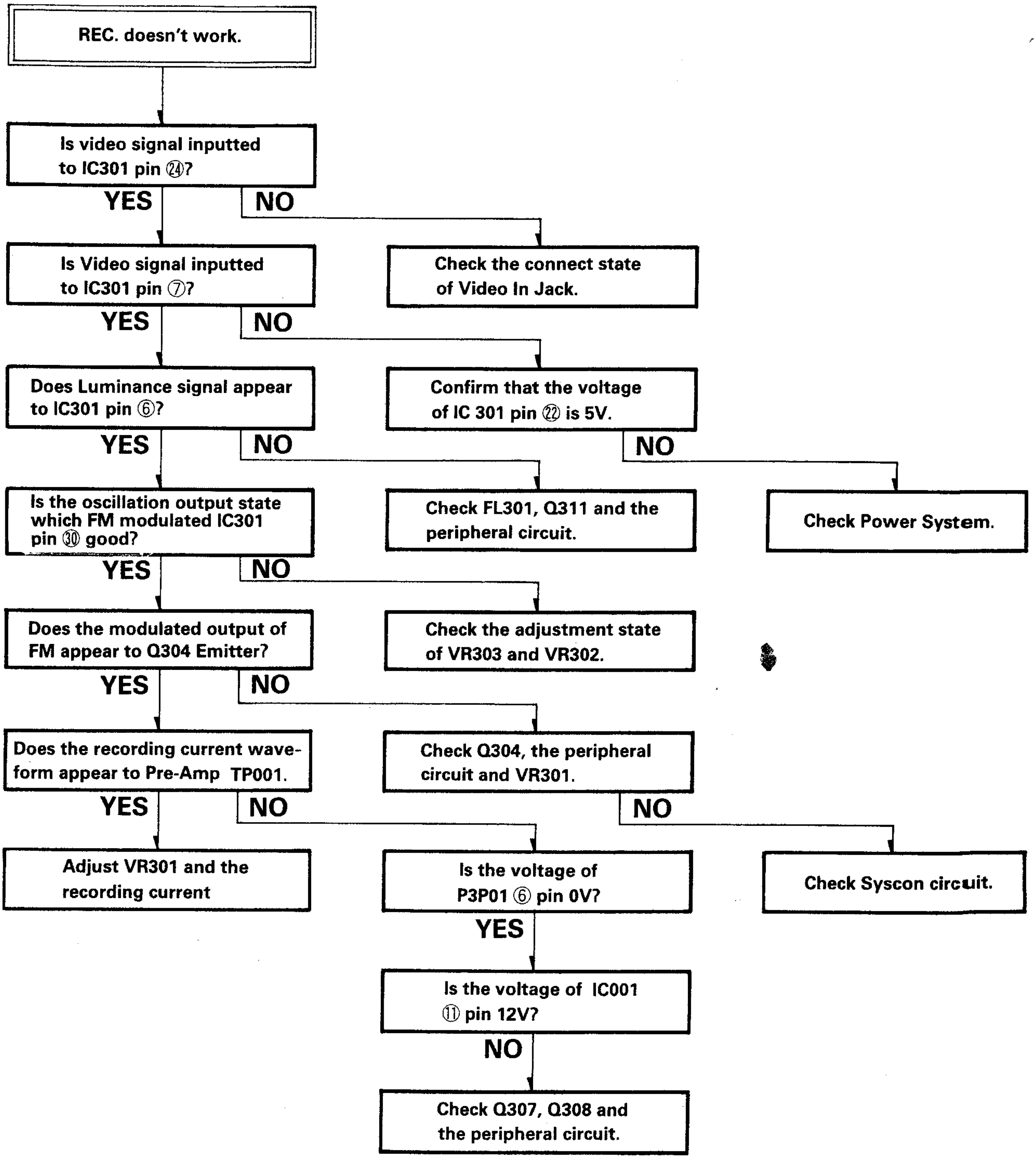

Audio recording is not possible.
Is the voltage at both sides of R/P Head?
YES
NO
Was VR402 adjusted for 2.2mV?
YES
NO
Adjust VR402.
Is 12V at pin① of IC401?
YES
NO
Check IC401 Vcc.
Is the Base of Q404 0V?
YES
NO
Check the peripheral circuit.
Check Syscon part. (REC start "L")
Does a signal appear at IC305 pin ⑪?
YES
NO
IS 12V applied to IC305 pin ⑨?
YES
NO
If a signal at pin ⑩, ⑫ of IC305. replace IC305.
Check Power part.
Does a signal appear at pin ㉚, ⑳ of IC401?
YES
NO
Check pin 8Vcc of IC401 and then replace IC401.
Is IC401 pin ⑨ GND?
YES
NO
Clean R/P Head.
Replace IC401.

3. Y/C Circuit

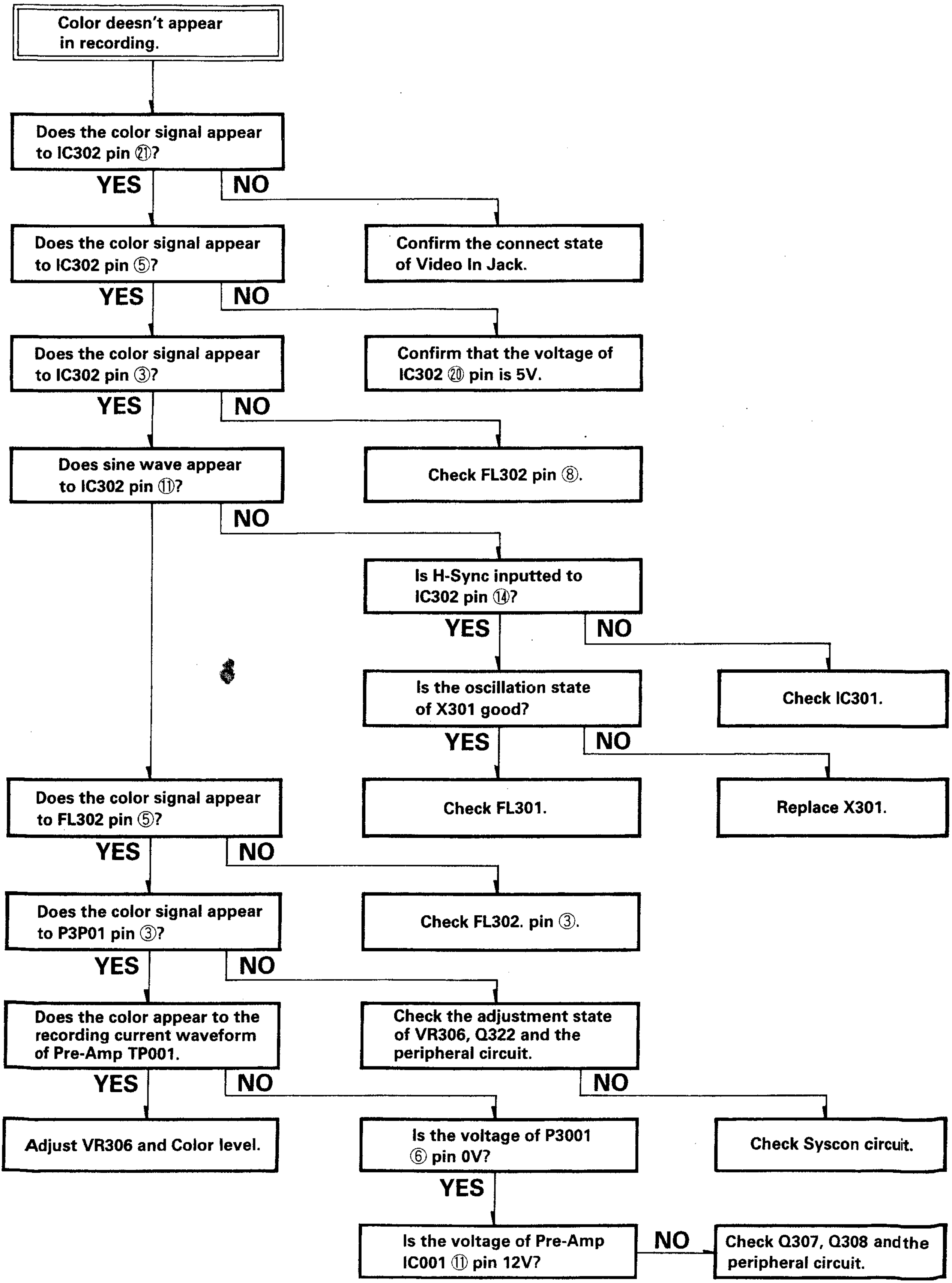

A.
The picture doesn't appear in playing back.
Does RF signal appear from W368(RF TP)
YES
NO
Is the voltage of 5V applied to IC301 pin ㉒?
1. Check the Pre-Amp PWB ASS'Y and connector(P3P01).
2. Clean Head Drum.
YES
NO
Is the voltage more than 4V applied to IC301 pin ⑤?
Check the power system.
YES
NO
Does the video signal appear to IC301 pin ㉑?
Check VV/EE terminal of syscon part.
NO
Is 3.5V applied to IC301 pin ⑯?
YES
NO
Is the Y-signal applied to IC301 pin ⑦?
Check the power source part of 5V.
YES
NO
Is the Y-signal applied to IC301 pin ⑨?
Replace IC301.
YES
NO
Check IC301 and the peripheral circuit.
Check FL301, Q309 and Q310.


B.
The color doesn't appear in playing back.
Is the voltage(PAL : 0-1V, MESECAM : 4-5V) applied to IC302 pin ①?
YES
NO
Is 5V applied to IC303 pin ⑨?
YES
NO
Is H-Sync signal applied to IC303 pin ⑦?
Check the power source part of 5V.
YES
Is RF signal inputted to FL302 pin ⑤?
Check IC303 and the peripheral parts.
YES
NO
Does the color signal appear to IC302 pin ⑦?
Check Pre-Amp ASS'Y and P3P01 connector.
YES
NO
Does the sine wave signal appear to IC302 pin ⑪?
Check FL302 pin ③, Q318 and the peripheral curcuit.
YES
NO
Does the color signal appear to IC302 pin ㉓?
Is H-Sync inputted to IC302 pin ⑭?
YES
NO
YES
NO
Is the oscillation state of X301 good?
Check IC301.
YES
NO
Check FL302 pin ①, ②?
Replace X301.
does the color signal appear to IC301 pin ⑲?
Check FL302 pin ⑥, ⑧ Q316, Q317, DL301 and the peripheral curcit.
YES
NO
Replace IC301.
Check the signal path between IC302 pin ㉓ and IC301 pin ⑲.

C.

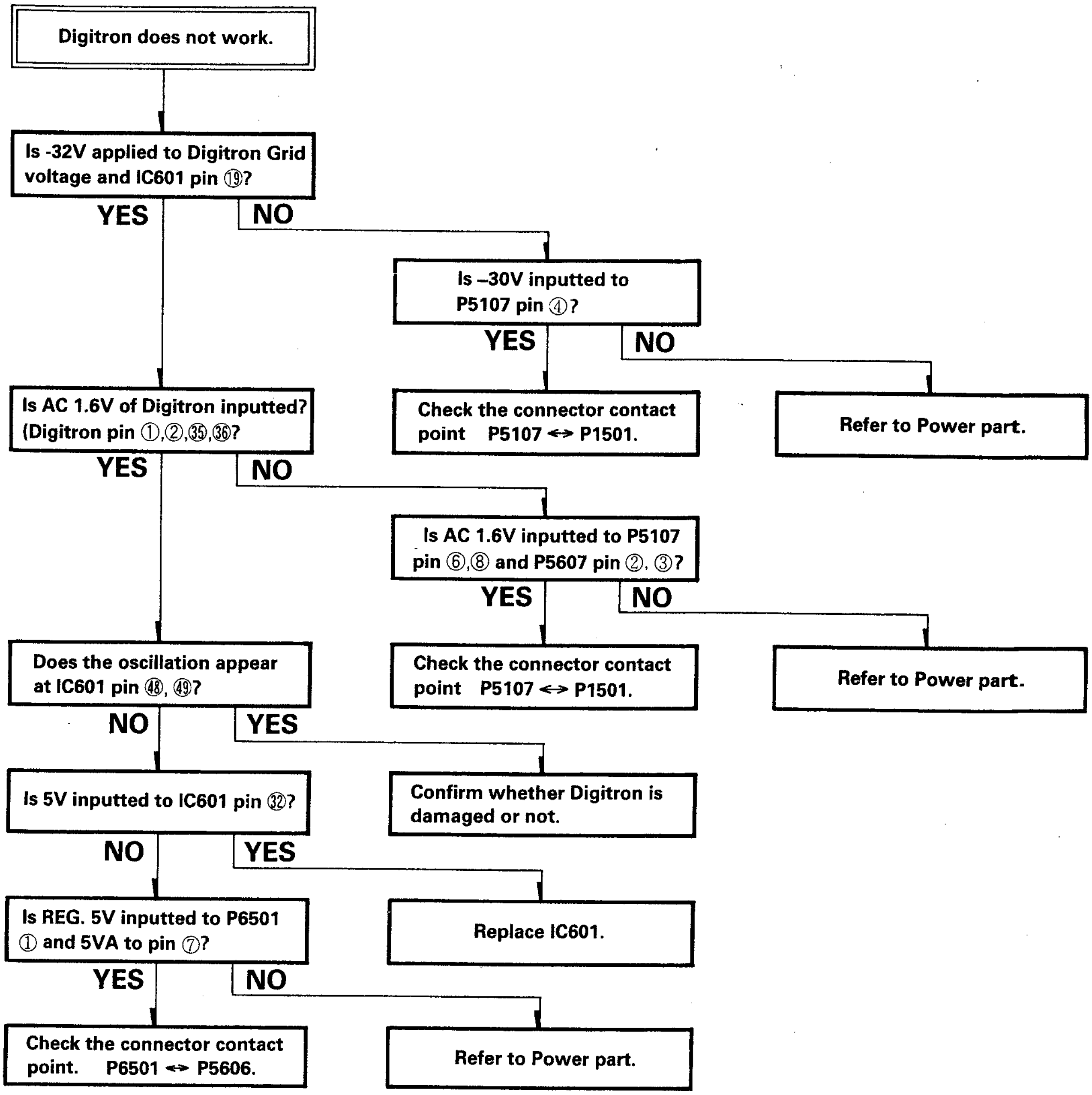

REC. doesn't work.
Is video signal inputted to IC301 pin ㉔?
YES
NO
Check the connect state of Video In Jack.
Is Video signal inputted to IC301 pin ⑦?
YES
NO
Confirm that the voltage of IC 301 pin ㉒ is 5V.
NO
Check Power System.
Does Luminance signal appear to IC301 pin ⑥?
YES
NO
Check FL301, Q311 and the peripheral circuit.
Is the oscillation output state which FM modulated IC301 pin ㉚ good?
YES
NO
Check the adjustment state of VR303 and VR302.
Does the modulated output of FM appear to Q304 Emitter?
YES
NO
Check Q304, the peripheral circuit and VR301.
NO
Check Syscon circuit.
Does the recording current wave-form appear to Pre-Amp TP001.
YES
NO
Adjust VR301 and the recording current
Is the voltage of P3P01 ⑥ pin 0V?
YES
Is the voltage of IC001 ⑪ pin 12V?
NO
Check Q307, Q308 and the peripheral circuit.

D.

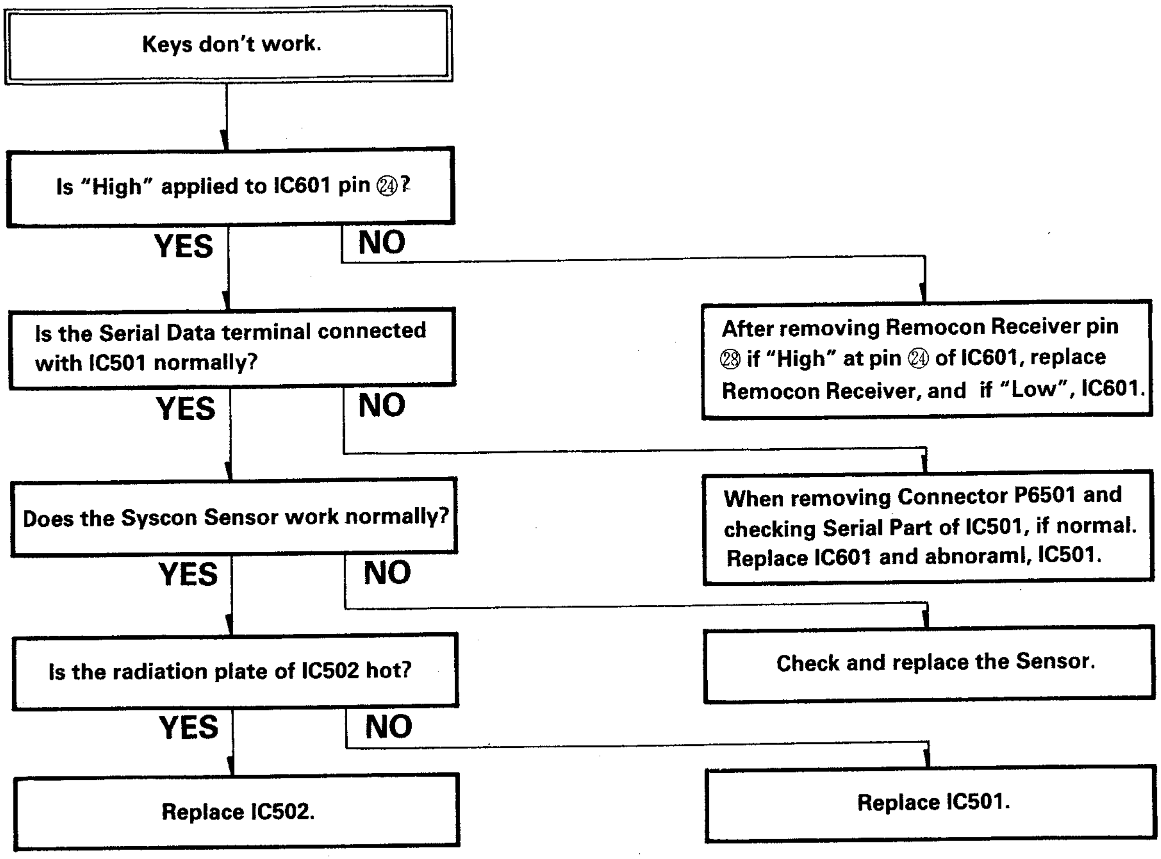

Color deesn't appear in recording.
Does the color signal appear to IC302 pin ㉑?
YES
NO
Confirm the connect state of Video In Jack.
Does the color signal appear to IC302 pin ⑤?
YES
NO
Confirm that the voltage of IC302 ⑳ pin is 5V.
Does the color signal appear to IC302 pin ③?
YES
NO
Check FL302 pin ⑧.
Does sine wave appear to IC302 pin ⑪?
NO
Is H-Sync inputted to IC302 pin ⑭?
YES
NO
Check IC301.
Is the oscillation state of X301 good?
YES
NO
Check FL301.
Replace X301.
Does the color signal appear to FL302 pin ⑤?
YES
NO
Check FL302. pin ③.
Does the color signal appear to P3P01 pin ③?
YES
NO
Check the adjustment state of VR306, Q322 and the peripheral circuit.
Does the color appear to the recording current waveform of Pre-Amp TP001.
YES
NO
NO
Adjust VR306 and Color level.
Is the voltage of P3001 ⑥ pin 0V?
Check Syscon circuit.
YES
Is the voltage of Pre-Amp IC001 ⑪ pin 12V?
NO
Check Q307, Q308 and the peripheral circuit.

4. Syscon Circuit

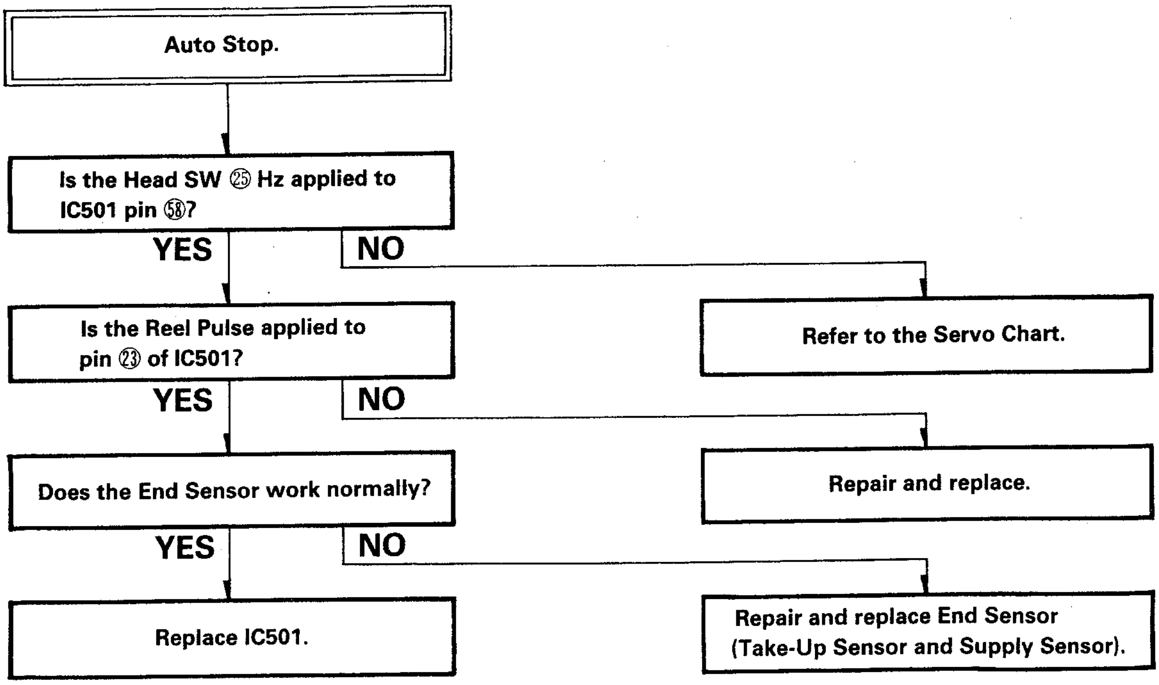
A.


Digitron does not work.
Is -32V applied to Digitron Grid voltage and IC601 pin ⑲?
YES
NO
Is –30V inputted to P5107 pin ④?
YES
NO
Check the connector contact point P5107 <-> P1501.
Refer to Power part.
Is AC 1.6V of Digitron inputted? (Digitron pin ①,②,㉟,㊱?
YES
NO
Is AC 1.6V inputted to P5107 pin ⑥,⑧ and P5607 pin ②, ③?
YES
NO
Check the connector contact point P5107 <-> P1501.
Refer to Power part.
Does the oscillation appear at IC601 pin ㊽, ㊾?
NO
YES
Confirm whether Digitron is damaged or not.
Is 5V inputted to IC601 pin ㉜?
NO
YES
Replace IC601.
Is REG. 5V inputted to P6501 ① and 5VA to pin ⑦?
YES
NO
Check the connector contact point. P6501 <-> P5606.
Refer to Power part.

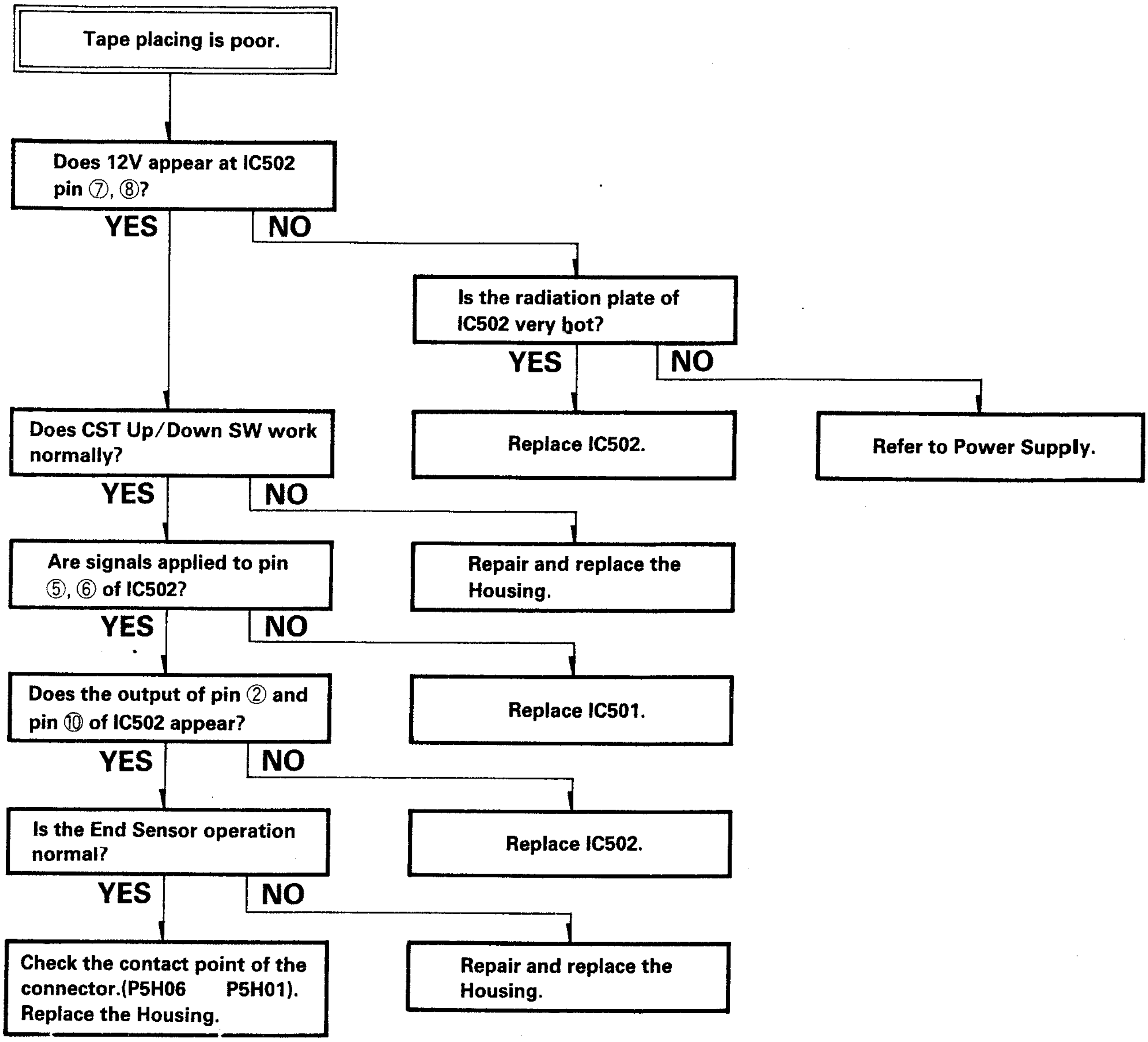
B.


Keys don't work.
Is "High" applied to IC601 pin ㉔?
YES
NO
After removing Remocon Receiver pin ㉘ if "High" at pin ㉔ of IC601, replace Remocon Receiver, and if "Low", IC601.
Is the Serial Data terminal connected with IC501 normally?
YES
NO
When removing Connector P6501 and checking Serial Part of IC501, if normal. Replace IC601 and abnoraml, IC501.
Does the Syscon Sensor work normally?
YES
NO
Check and replace the Sensor.
Is the radiation plate of IC502 hot?
YES
NO
Replace IC502.
Replace IC501.

C.

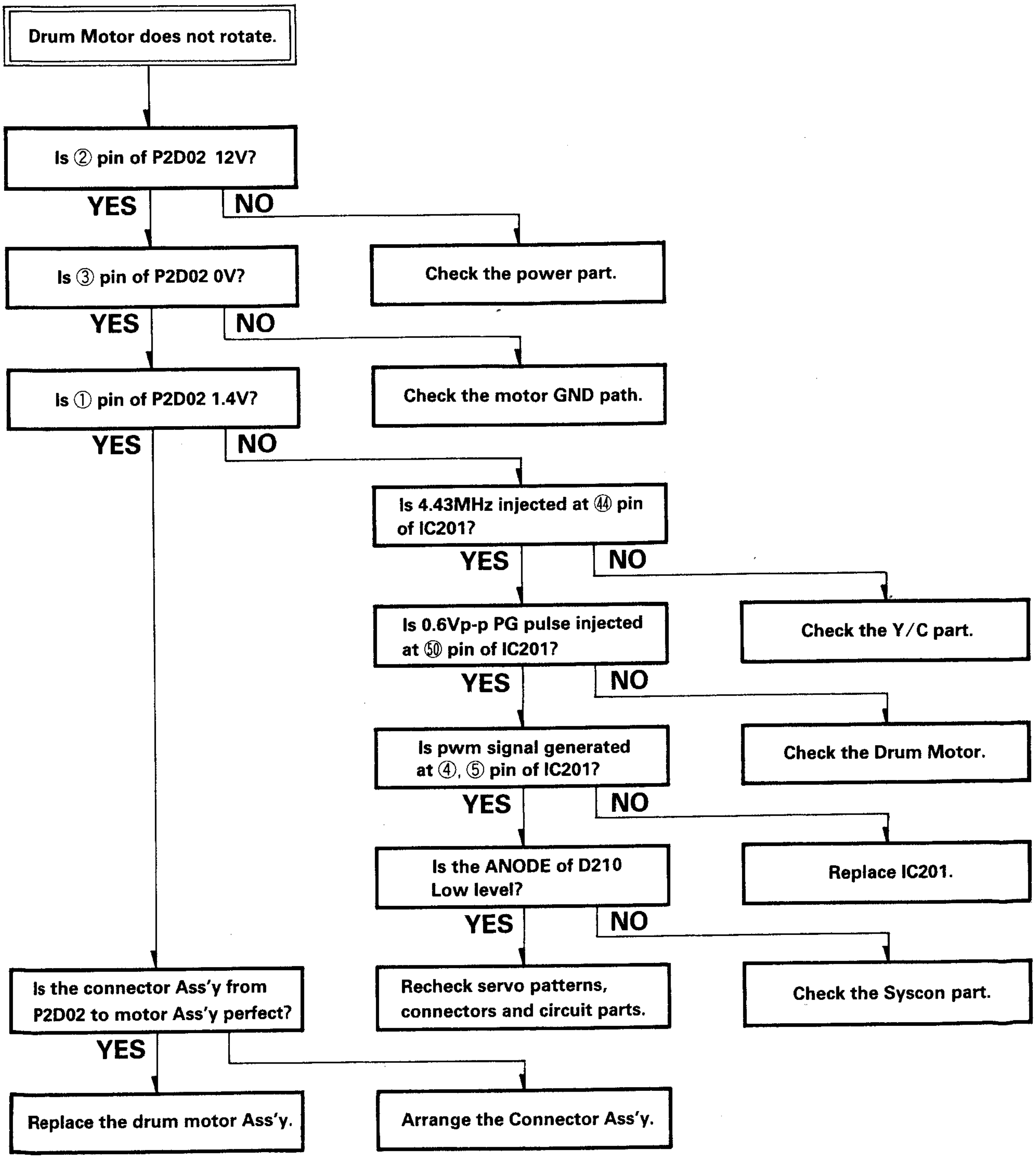

Auto Stop.
Is the Head SW ㉕ Hz applied to IC501 pin (58)?
YES
NO
Refer to the Servo Chart.
Is the Reel Pulse applied to pin ㉓ of IC501?
YES
NO
Repair and replace.
Does the End Sensor work normally?
YES
NO
Replace IC501.
Repair and replace End Sensor (Take-Up Sensor and Supply Sensor).

D.

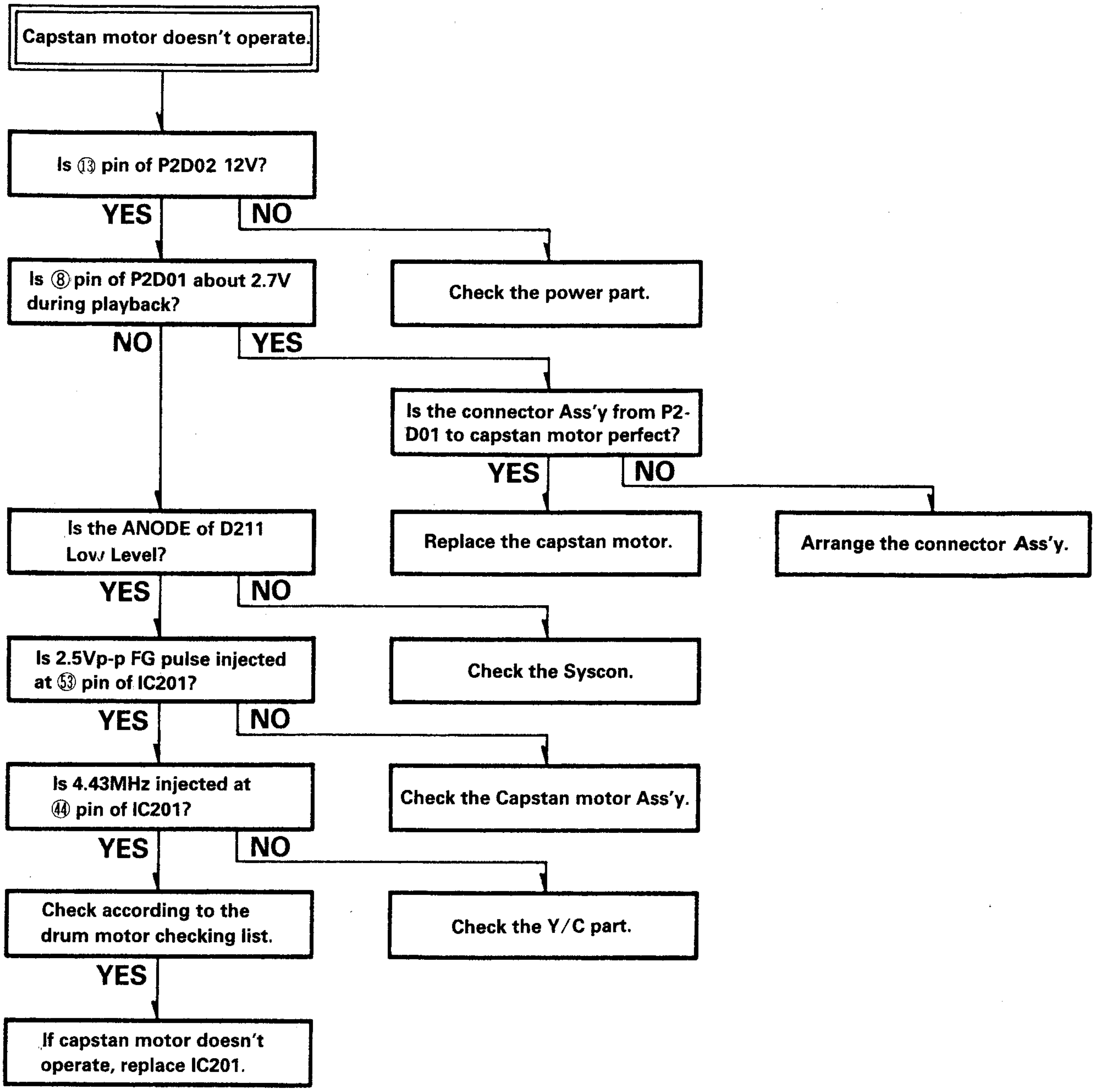

Tape placing is poor.
Does 12V appear at IC502 pin ⑦, ⑧?
YES
NO
Is the radiation plate of IC502 very hot?
YES
NO
Replace IC502.
Refer to Power Supply.
Does CST Up/Down SW work normally?
YES
NO
Repair and replace the Housing.
Are signals applied to pin ⑤, ⑥ of IC502?
YES
NO
Replace IC501.
Does the output of pin ② and pin ⑩ of IC502 appear?
YES
NO
Replace IC502.
Is the End Sensor operation normal?
YES
NO
Repair and replace the Housing.
Check the contact point of the connector.(P5H06 P5H01).
Replace the Housing.

5. Servo Circuit

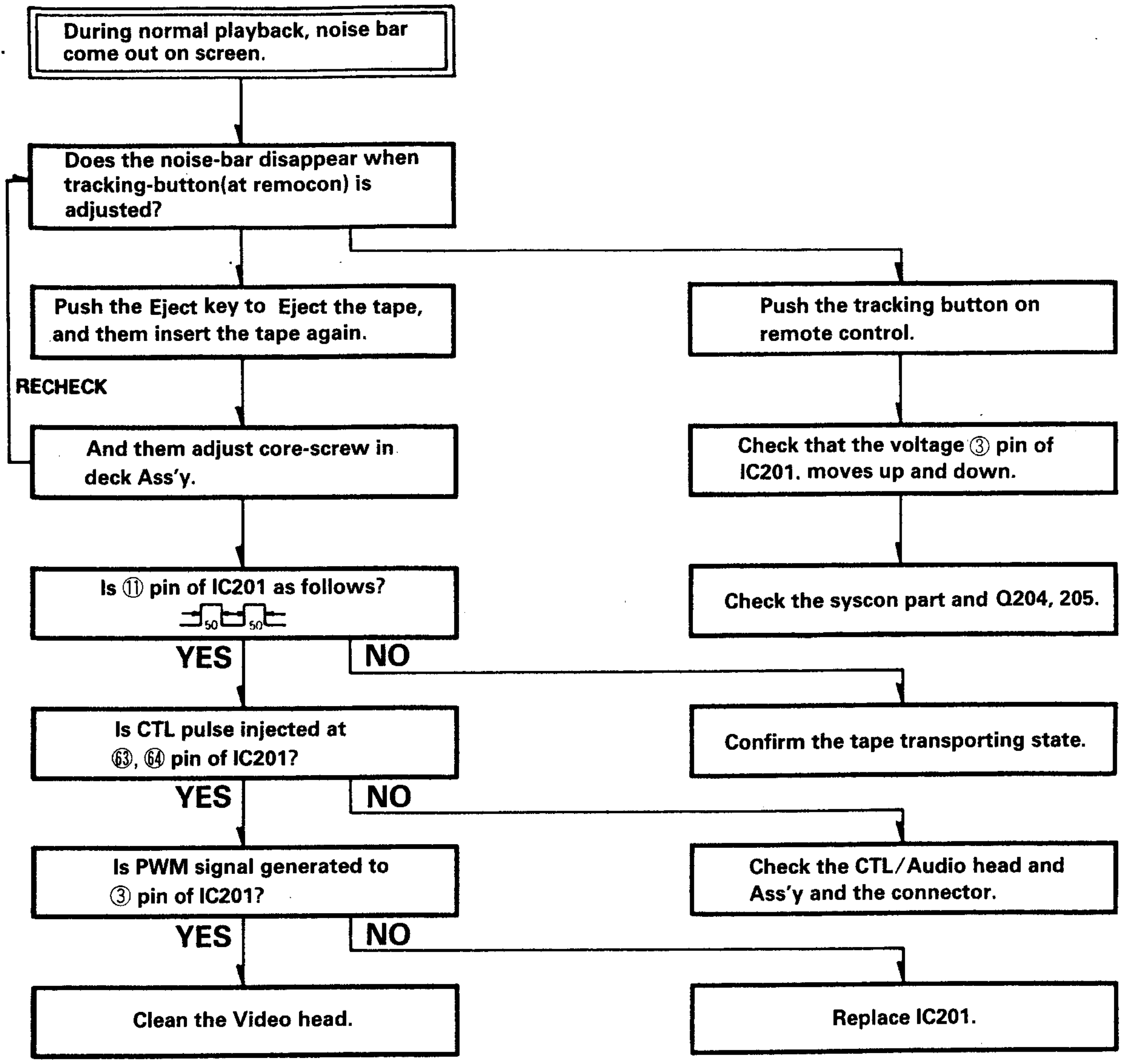
A.


Drum Motor does not rotate.
Is ② pin of P2D02 12V?
YES
NO
Check the power part.
Is ③ pin of P2D02 0V?
YES
NO
Check the motor GND path.
Is ① pin of P2D02 1.4V?
YES
NO
Is 4.43MHz injected at ㊹ pin of IC201?
YES
NO
Check the Y/C part.
Is 0.6Vp-p PG pulse injected at ㊿ pin of IC201?
YES
NO
Check the Drum Motor.
Is pwm signal generated at ④, ⑤ pin of IC201?
YES
NO
Replace IC201.
Is the ANODE of D210 Low level?
YES
NO
Check the Syscon part.
Recheck servo patterns, connectors and circuit parts.
Is the connector Ass'y from P2D02 to motor Ass'y perfect?
YES
Replace the drum motor Ass'y.
Arrange the Connector Ass'y.

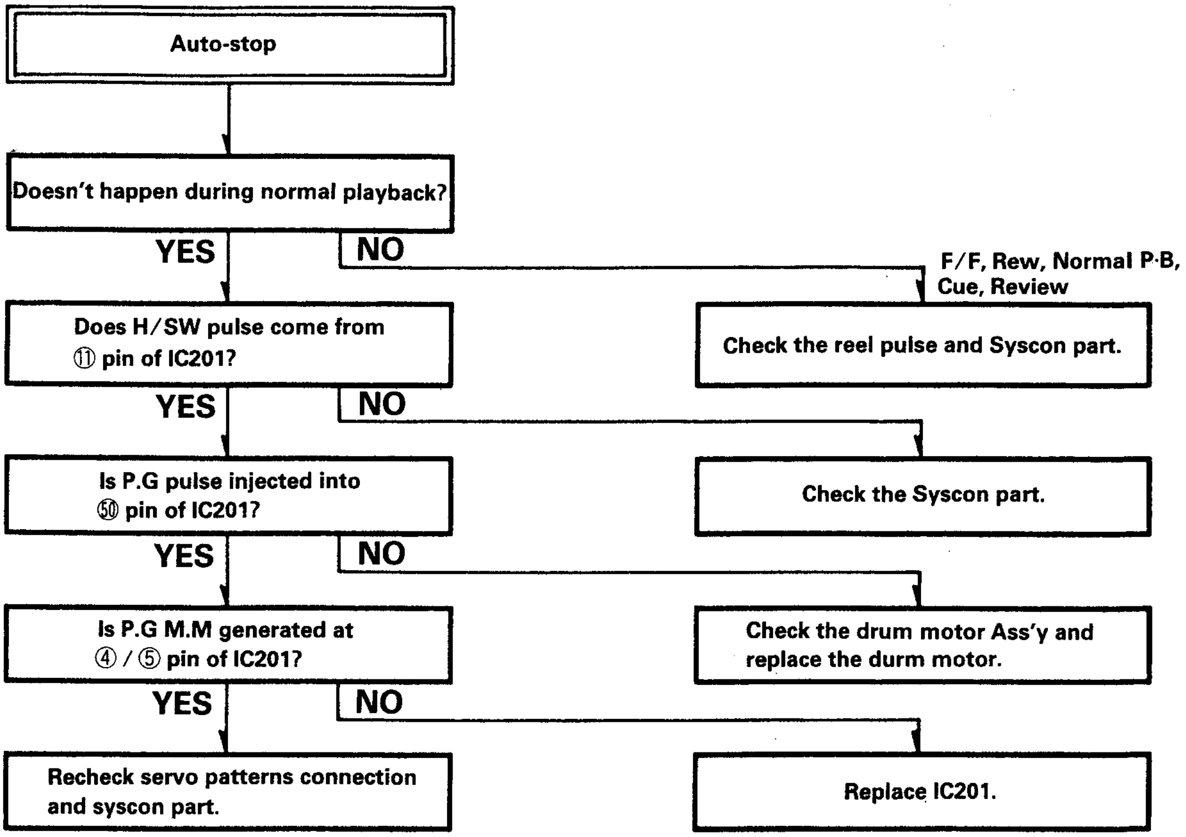
B.


Capstan motor doesn't operate.
Is ⑬ pin of P2D02 12V?
YES
NO
Check the power part.
Is ⑧ pin of P2D01 about 2.7V during playback?
NO
YES
Is the connector Ass'y from P2-D01 to capstan motor perfect?
YES
NO
Replace the capstan motor.
Arrange the connector Ass'y.
Is the ANODE of D211 Low Level?
YES
NO
Check the Syscon.
Is 2.5Vp-p FG pulse injected at (53) pin of IC201?
YES
NO
Check the Capstan motor Ass'y.
Is 4.43MHz injected at ㊹ pin of IC201?
YES
NO
Check the Y/C part.
Check according to the drum motor checking list.
YES
If capstan motor doesn't operate, replace IC201.

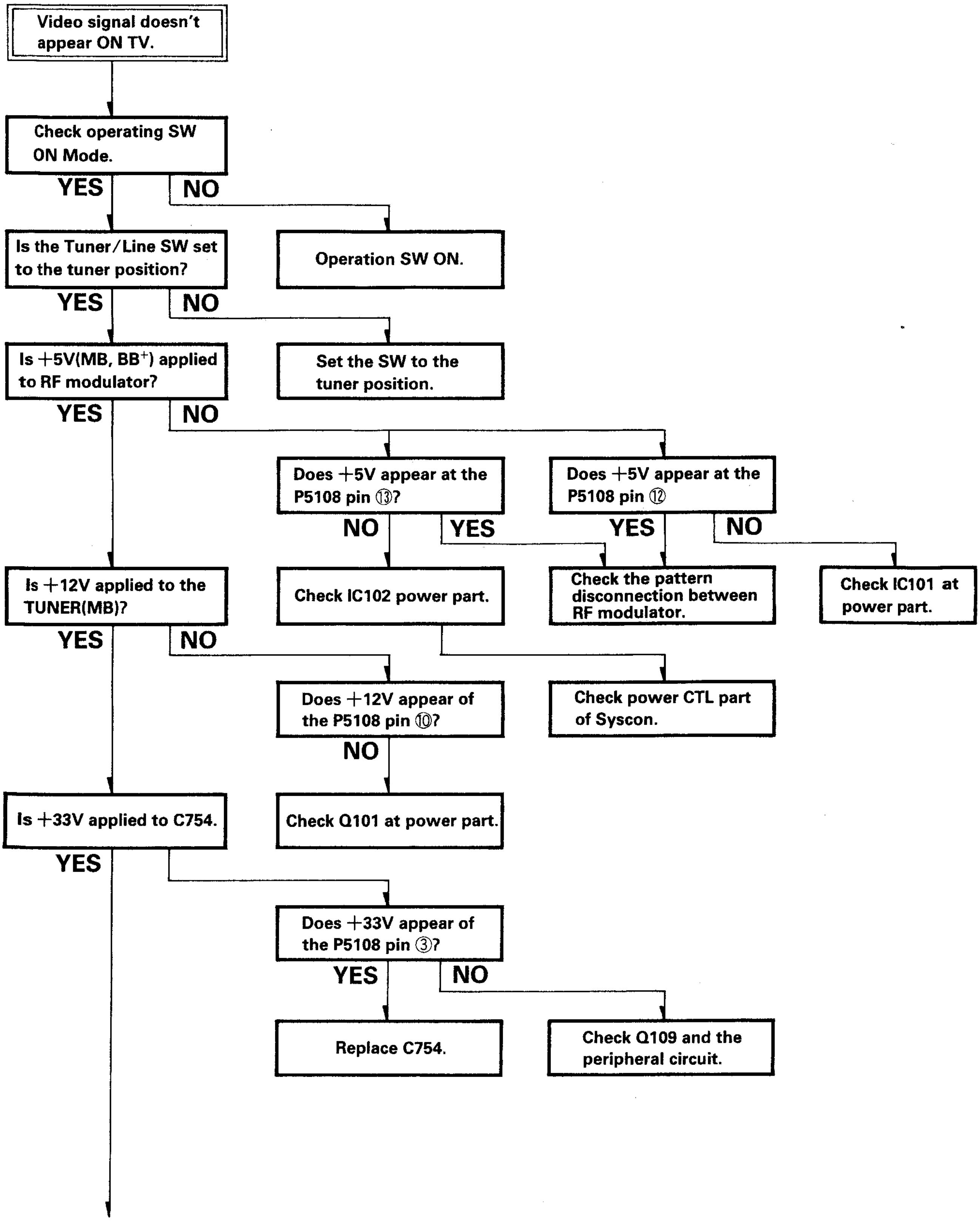
C.

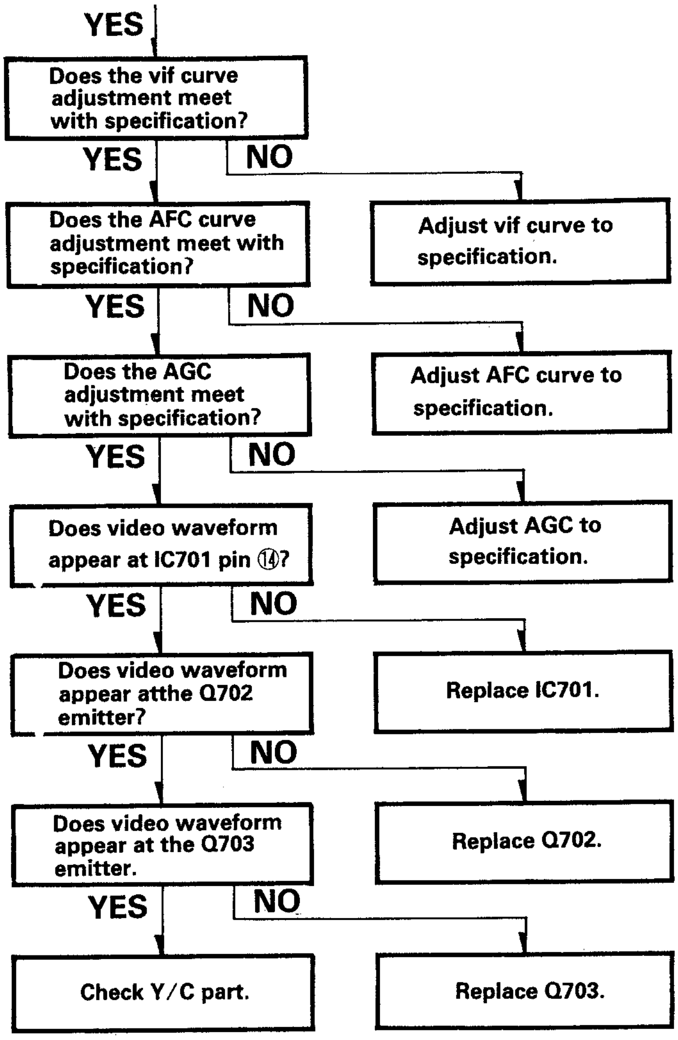

During normal playback, noise bar come out on screen.
Does the noise-bar disappear when tracking-button(at remocon) is adjusted?
Push the Eject key to Eject the tape, and them insert the tape again.
RECHECK
And them adjust core-screw in deck Ass'y.
Push the tracking button on remote control.
Check that the voltage ③ pin of IC201. moves up and down.
Check the syscon part and Q204, 205.
Is ⑪ pin of IC201 as follows?
50
50
YES
NO
Confirm the tape transporting state.
Is CTL pulse injected at ㊸, ㊹ pin of IC201?
YES
NO
Check the CTL/Audio head and Ass'y and the connector.
Is PWM signal generated to ③ pin of IC201?
YES
NO
Clean the Video head.
Replace IC201.

D.


Auto-stop
Doesn't happen during normal playback?
YES
NO
F/F, Rew, Normal P·B, Cue, Review
Check the reel pulse and Syscon part.
Does H/SW pulse come from ⑪ pin of IC201?
YES
NO
Check the Syscon part.
Is P.G pulse injected into ㊿ pin of IC201?
YES
NO
Check the drum motor Ass'y and replace the durm motor.
Is P.G M.M generated at ④ / ⑤ pin of IC201?
YES
NO
Replace IC201.
Recheck servo patterns connection and syscon part.

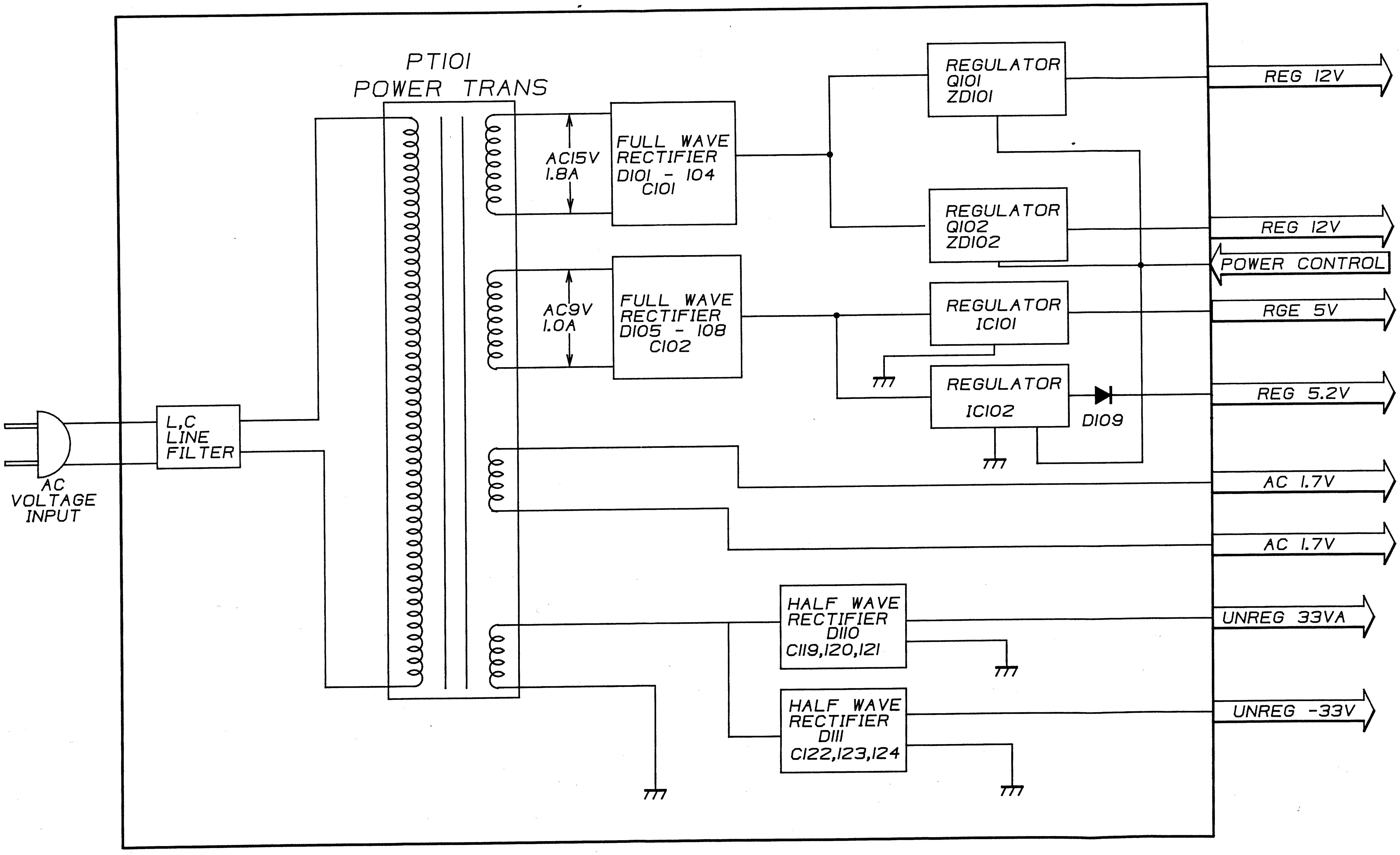
6. Tuner/IF Circuit


Video signal doesn't appear ON TV.
Check operating SW ON Mode.
YES
NO
Operation SW ON.
Is the Tuner/Line SW set to the tuner position?
YES
NO
Set the SW to the tuner position.
Is +5V(MB, BB+) applied to RF modulator?
YES
NO
Does +5V appear at the P5108 pin ⑬?
NO
YES
Does +5V appear at the P5108 pin ⑫
YES
NO
Check IC102 power part.
Check the pattern disconnection between RF modulator.
Check IC101 at power part.
Is +12V applied to the TUNER(MB)?
YES
NO
Does +12V appear of the P5108 pin ⑩?
NO
Check power CTL part of Syscon.
Check Q101 at power part.
Is +33V applied to C754.
YES
Does +33V appear of the P5108 pin ③?
YES
NO
Replace C754.
Check Q109 and the peripheral circuit.

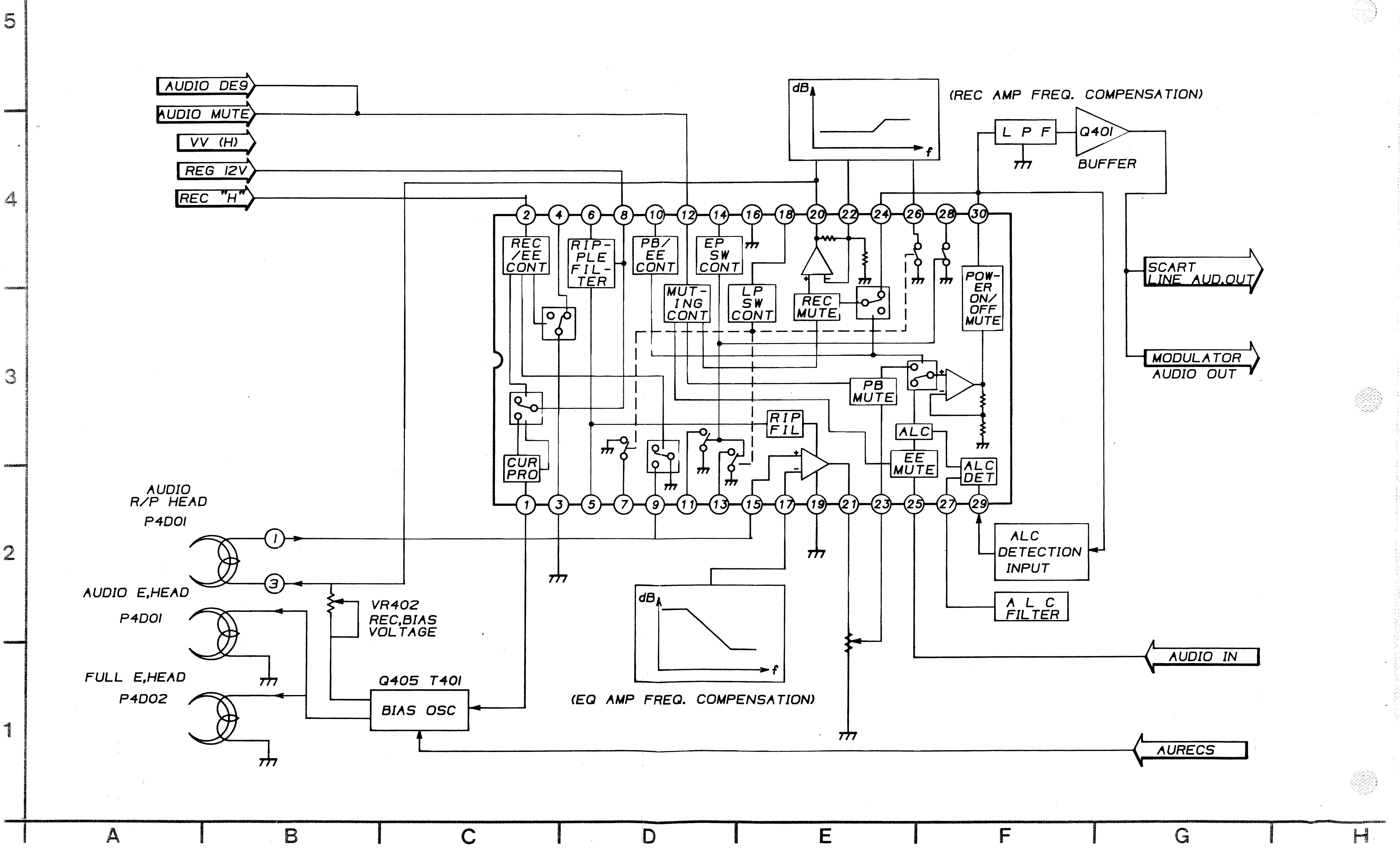

YES
Does the vif curve adjustment meet with specification?
YES
NO
Adjust vif curve to specification.
Does the AFC curve adjustment meet with specification?
YES
NO
Adjust AFC curve to specification.
Does the AGC adjustment meet with specification?
YES
NO
Adjust AGC to specification.
Does video waveform appear at IC701 pin ⑭?
YES
NO
Replace IC701.
Does video waveform appear atthe Q702 emitter?
YES
NO
Replace Q702.
Does video waveform appear at the Q703 emitter.
YES
NO
Replace Q703.
Check Y/C part.

BLOCK DIAGRAM

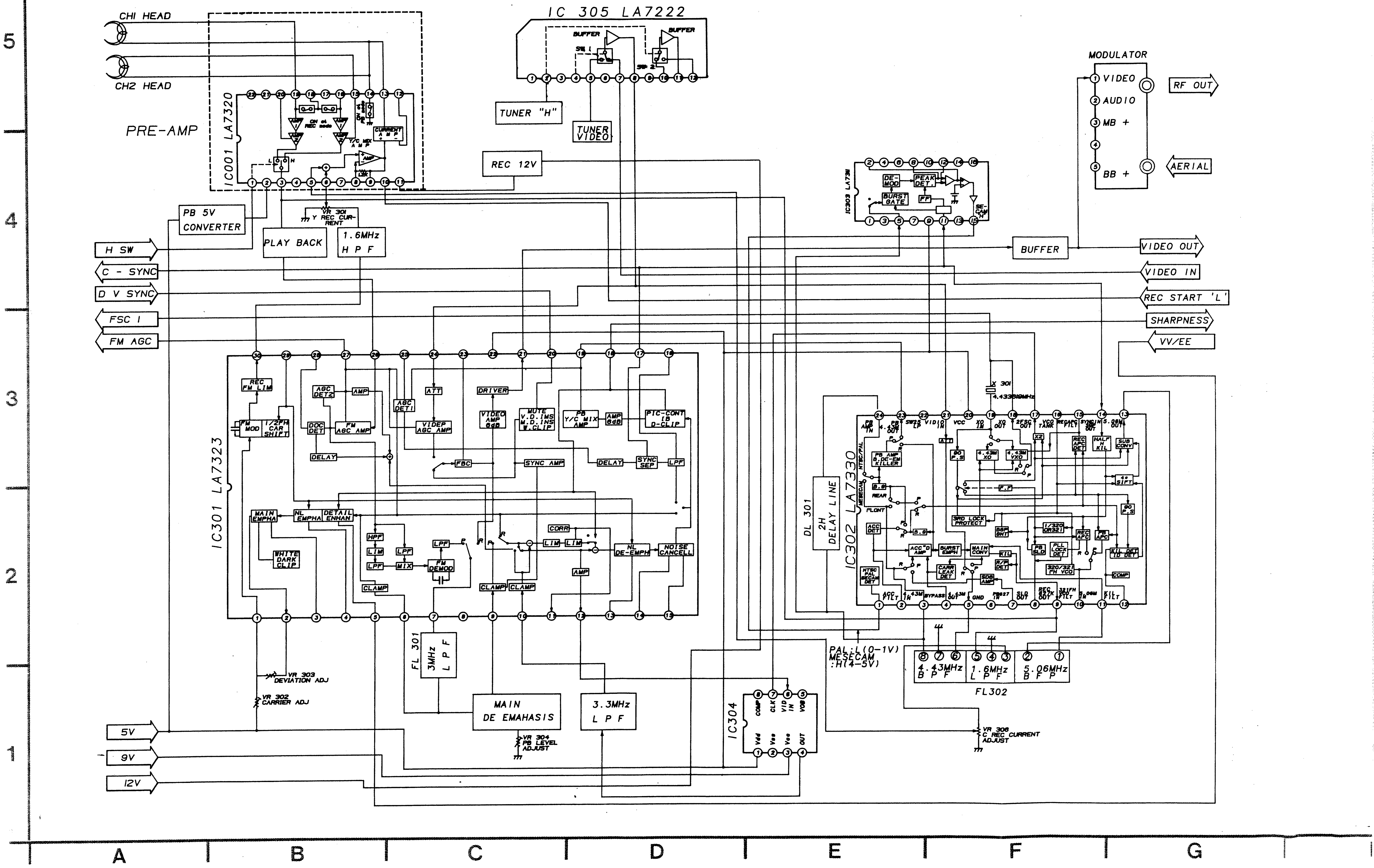
1. Power Block Diagram


PT101
POWER TRANS
AC VOLTAGE INPUT
L,C LINE FILTER
AC15V 1.8A
FULL WAVE RECTIFIER D101 - 104 C101
AC9V 1.0A
FULL WAVE RECTIFIER D105 - 108 C102
REGULATOR Q101 ZD101
REGULATOR Q102 ZD102
REGULATOR IC101
REGULATOR IC102
D109
HALF WAVE RECTIFIER D110 C119,120,121
HALF WAVE RECTIFIER D111 C122,123,124
REG 12V
REG 12V
POWER CONTROL
RGE 5V
REG 5.2V
AC 1.7V
AC 1.7V
UNREG 33VA
UNREG -33V

2. Audio Block Diagram

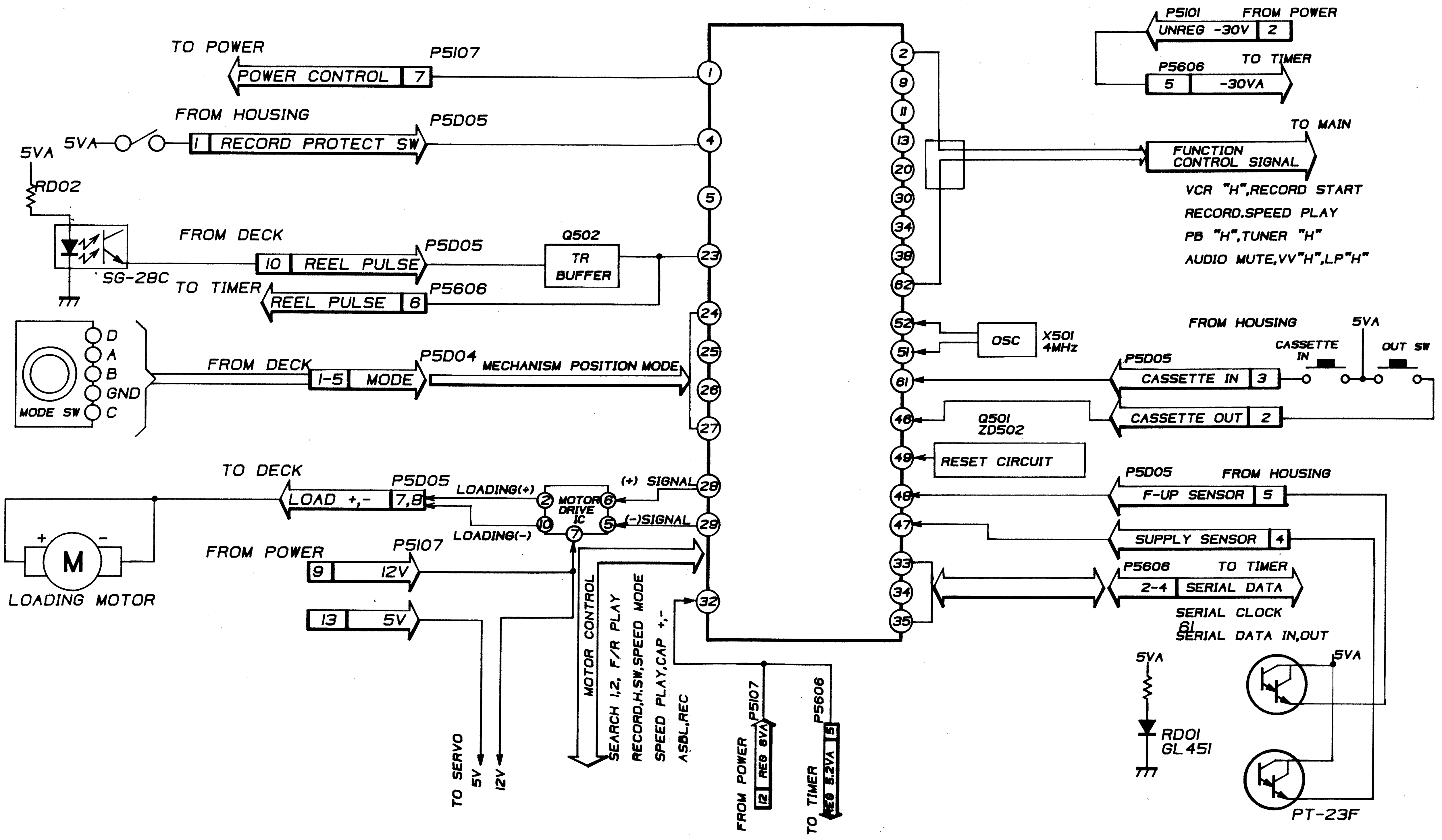

AUDIO DE9
AUDIO MUTE
VV (H)
REG 12V
REC "H"
dB
f
(REC AMP FREQ. COMPENSATION)
L P F
Q401
BUFFER
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
REC /EE CONT
RIP-PLE FIL-TER
PB/ EE CONT
EP SW CONT
MUT-ING CONT
LP SW CONT
REC MUTE
POW-ER ON/ OFF MUTE
PB MUTE
RIP FIL
ALC
EE MUTE
ALC DET
CUR PRO
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
SCART LINE AUD.OUT
MODULATOR AUDIO OUT
AUDIO R/P HEAD
P4D01
AUDIO E,HEAD
P4D01
FULL E,HEAD
P4D02
1
3
VR402 REC,BIAS VOLTAGE
Q405 T401
BIAS OSC
dB
f
(EQ AMP FREQ. COMPENSATION)
ALC DETECTION INPUT
A L C FILTER
AUDIO IN
AURECS
5
4
3
2
1
A
B
C
D
E
F
G
H

3. Y/C Block Diagram

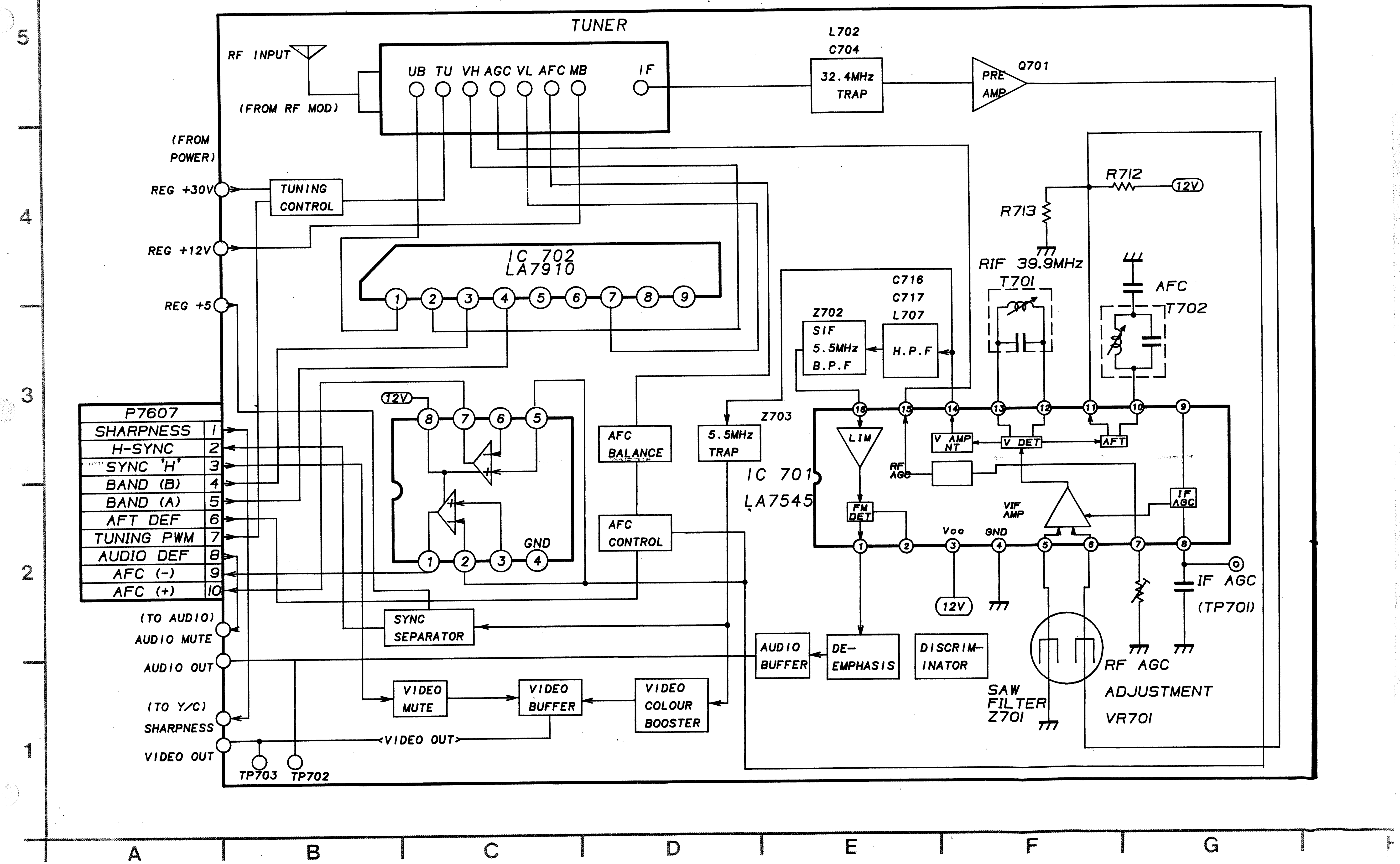


CHI HEAD
CH2 HEAD
PRE-AMP
IC001 LA7320
PB 5V CONVERTER
PLAY BACK
1.6MHz H P F
VR 301 Y REC CURRENT
IC 305 LA7222
BUFFER
SW 1
SW 2
TUNER "H"
TUNER VIDEO
REC 12V
IC303 LA7311
DE-MOD
PEAK DET.
BURST GATE
FF
SE-CAM H
MODULATOR
VIDEO
AUDIO
MB +
BB +
RF OUT
AERIAL
BUFFER
VIDEO OUT
VIDEO IN
REC START 'L'
SHARPNESS
VV/EE
H SW
C - SYNC
D V SYNC
FSC I
FM AGC
IC301 LA7323
REC FM LIM
FM MOD
1/2FH CAR SHIFT
AGC DET2
AMP
DOC DET
FM AGC AMP
AGC DET1
ATT
VIDEP AGC AMP
DRIVER
VIDEO AMP 6dB
MUTE V.D.IMS M.D.INS W.CLIP
PB Y/C MIX AMP
AMP 6dB
PIC-CONT IB D-CLIP
DELAY
FBC
SYNC AMP
SYNC SEP
LPF
MAIN EMPHA
NL EMPHA
DETAIL ENHAN
WHITE DARK CLIP
HPF
LIM
LPF
MIX
FM DEMOD
CORR
NL DE-EMPH
NOISE CANCELL
CLAMP
X 301 4.433619MHz
DL 301 2H DELAY LINE
IC302 LA7330
ACC DET
ACC'D AMP
BURST EMPH
MAIN CONV
KIL
CARR LEAK DET
R/P DET
SDB AMP
NTSC PAL SECAM DET
3RD LOCK PROTECT
4.43M XO
4.43M VXO
HALF H KIL
SUB CONV
REC APC DET
PB APC
KIL DET ID DET
COMP
PB SLD
PLL LOCK DET
320/321 FH VCO
1/320 OR321
FL 301 3MHz L P F
VR 303 DEVIATION ADJ
VR 302 CARRIER ADJ
MAIN DE EMAHASIS
VR 304 PB LEVEL ADJUST
3.3MHz L P F
IC304
COMP
CLK
VID IN
VDB
Vdd
Vcc
Vcc
OUT
PAL:L(0-1V) MESECAM :H(4-5V)
4.43MHz B P F
1.6MHz L P F
5.06MHz B P F
FL302
VR 306 C REC CURRENT ADJUST
5V
9V
12V
A
B
C
D
E
F
G
1
2
3
4
5

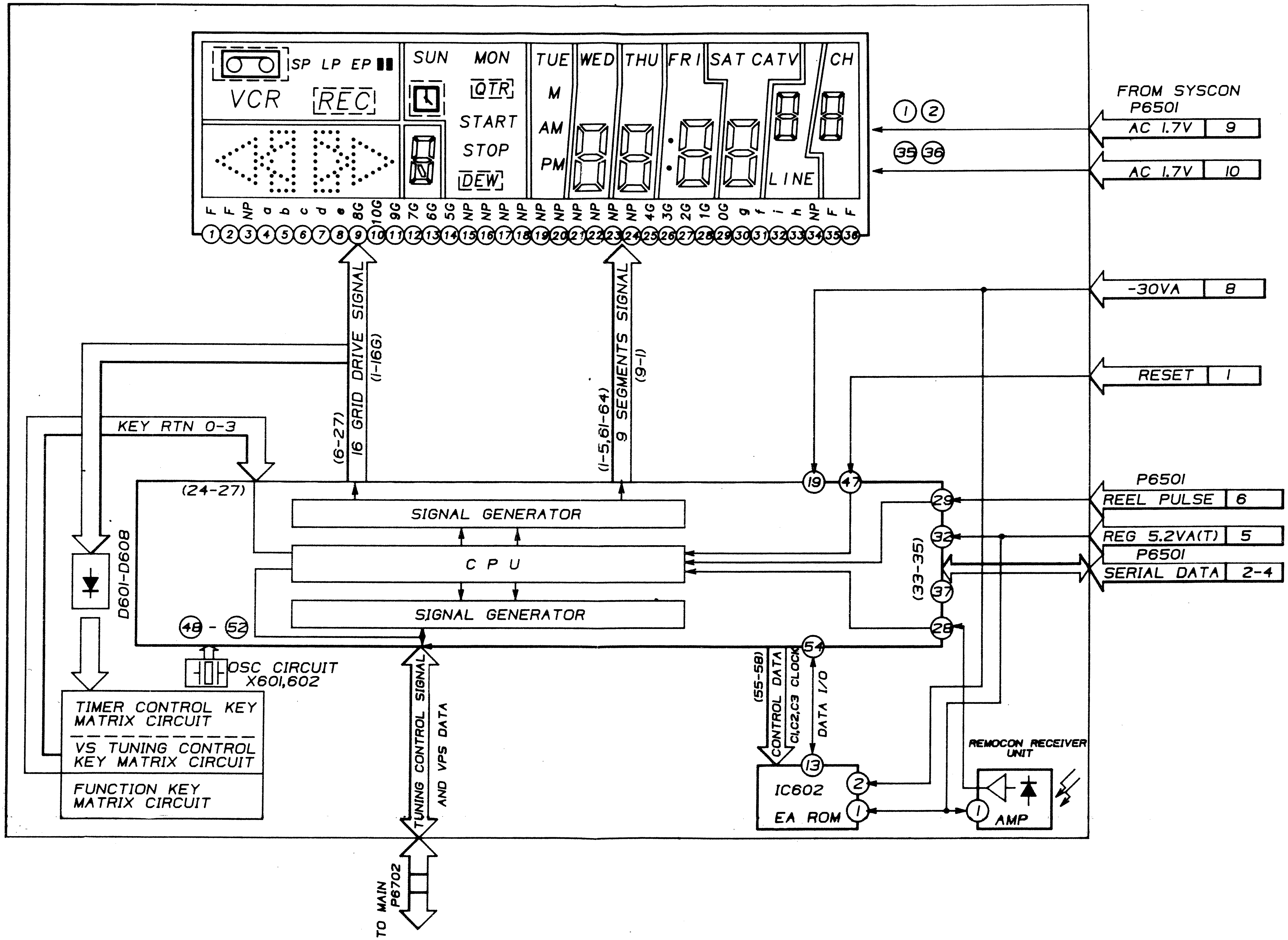
4. Servo/System control Block Diagram


TO POWER
POWER CONTROL 7
P5107
FROM HOUSING
5VA
5VA
1 RECORD PROTECT SW
P5D05
RD02
SG-28C
FROM DECK
10 REEL PULSE
P5D05
Q502
TR BUFFER
TO TIMER
REEL PULSE 6
P5606
D
A
B
GND
C
MODE SW
FROM DECK
1-5 MODE
P5D04
MECHANISM POSITION MODE
TO DECK
LOAD +,- 7,8
P5D05
LOADING(+)
LOADING(-)
MOTOR DRIVE IC
(+) SIGNAL
(-)SIGNAL
LOADING MOTOR
M
FROM POWER
9 12V
P5107
13 5V
TO SERVO 5V 12V
MOTOR CONTROL
SEARCH 1,2, F/R PLAY
RECORD,H.SW,SPEED MODE
SPEED PLAY,CAP +,-
ASBL,REC
FROM POWER 12 REG 6VA P5107
TO TIMER REG 5.2VA 5 P5606
P5101 FROM POWER
UNREG -30V 2
P5606 TO TIMER
5 -30VA
TO MAIN
FUNCTION CONTROL SIGNAL
VCR "H",RECORD START
RECORD.SPEED PLAY
PB "H",TUNER "H"
AUDIO MUTE,VV"H",LP"H"
OSC
X501 4MHz
FROM HOUSING
5VA
CASSETTE IN
OUT SW
P5D05
CASSETTE IN 3
CASSETTE OUT 2
Q501 ZD502
RESET CIRCUIT
P5D05 FROM HOUSING
F-UP SENSOR 5
SUPPLY SENSOR 4
P5606 TO TIMER
2-4 SERIAL DATA
SERIAL CLOCK
61
SERIAL DATA IN,OUT
5VA
RD01 GL451
5VA
PT-23F
1
4
5
23
24
25
26
27
28
29
32
2
9
11
13
20
30
34
38
62
52
51
61
46
49
48
47
33
34
35
2
10
7
6
5

5. Tuner/IF Block Diagram


TUNER
RF INPUT
(FROM RF MOD)
UB TU VH AGC VL AFC MB
IF
L702
C704
32.4MHz TRAP
PRE AMP
Q701
(FROM POWER)
REG +30V
REG +12V
REG +5
TUNING CONTROL
IC 702
LA7910
1 2 3 4 5 6 7 8 9
R712
12V
R713
RIF 39.9MHz
T701
AFC
T702
C716
C717
L707
Z702
SIF 5.5MHz B.P.F
H.P.F
P7607
SHARPNESS 1
H-SYNC 2
SYNC 'H' 3
BAND (B) 4
BAND (A) 5
AFT DEF 6
TUNING PWM 7
AUDIO DEF 8
AFC (-) 9
AFC (+) 10
12V
8 7 6 5
1 2 3 4
GND
AFC BALANCE
AFC CONTROL
Z703
5.5MHz TRAP
IC 701
LA7545
LIM
FM DET
V AMP NT
V DET
AFT
RF AGC
VIF AMP
IF AGC
Vcc
GND
16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
12V
IF AGC
(TP701)
(TO AUDIO)
AUDIO MUTE
AUDIO OUT
SYNC SEPARATOR
AUDIO BUFFER
DE-EMPHASIS
DISCRIMINATOR
SAW FILTER Z701
RF AGC ADJUSTMENT VR701
(TO Y/C)
SHARPNESS
VIDEO OUT
VIDEO MUTE
VIDEO BUFFER
VIDEO COLOUR BOOSTER
<VIDEO OUT>
TP703
TP702
5
4
3
2
1
A
B
C
D
E
F
G

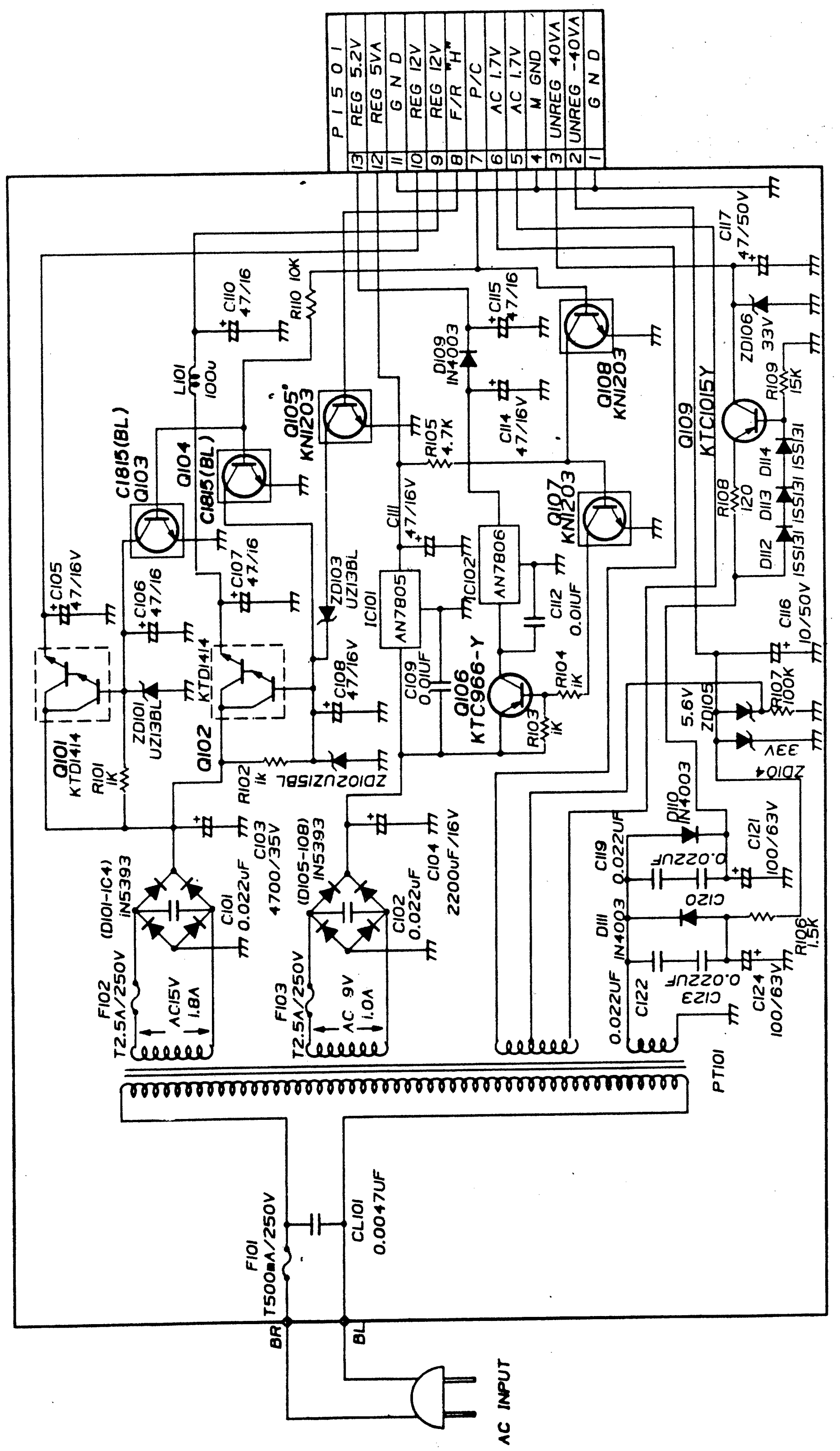
6. Timer Block Diagram


SP LP EP
VCR
REC
SUN
MON
QTR
START
STOP
DEW
TUE
WED
THU
FRI
SAT
CATV
CH
M
AM
PM
LINE
F F NP a b c d e 8G 10G 9G 7G 6G 5G NP NP NP NP NP NP NP NP NP NP NP 4G 3G 2G 1G 0G g f i h NP F F
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36)
① ②
(35) (36)
FROM SYSCON
P6501
AC 1.7V 9
AC 1.7V 10
-30VA 8
RESET 1
P6501
REEL PULSE 6
REG 5.2VA(T) 5
P6501
SERIAL DATA 2-4
16 GRID DRIVE SIGNAL
(1-16G)
(6-27)
9 SEGMENTS SIGNAL
(9-1)
(1-5,61-64)
KEY RTN 0-3
(24-27)
SIGNAL GENERATOR
CPU
SIGNAL GENERATOR
⑲ (47)
(29)
(32)
(33-35)
(37)
(28)
(48) - (52)
(54)
D601-D608
OSC CIRCUIT
X601,602
TIMER CONTROL KEY MATRIX CIRCUIT
VS TUNING CONTROL KEY MATRIX CIRCUIT
FUNCTION KEY MATRIX CIRCUIT
TUNING CONTROL SIGNAL AND VPS DATA
TO MAIN P6702
(55-58)
CONTROL DATA
C1,C2,C3 CLOCK
DATA I/O
⑬
②
①
IC602
EA ROM
REMOCON RECEIVER UNIT
①
AMP

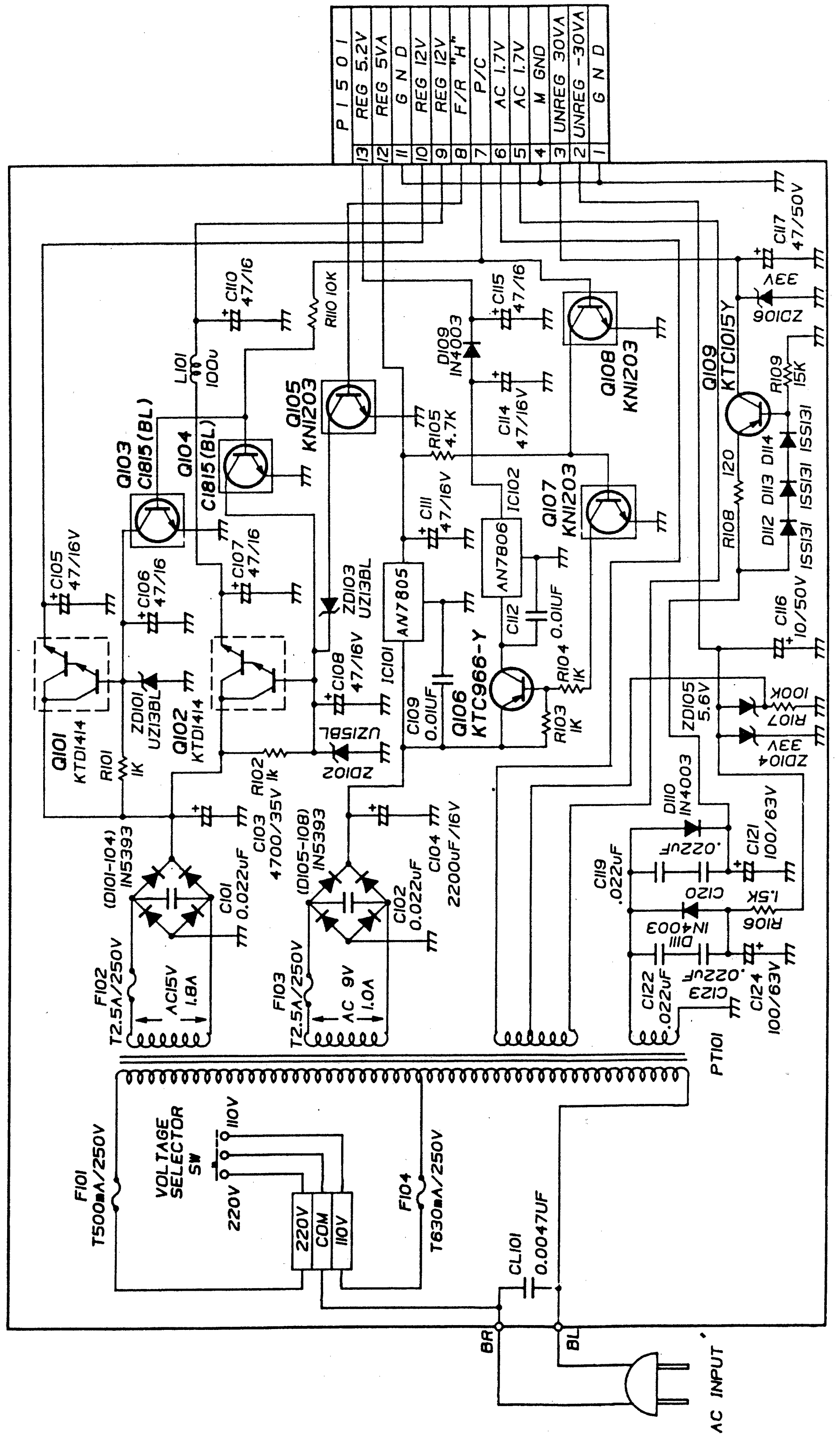
CIRCUIT DIAGRAM

1. Power Circuit Diagram

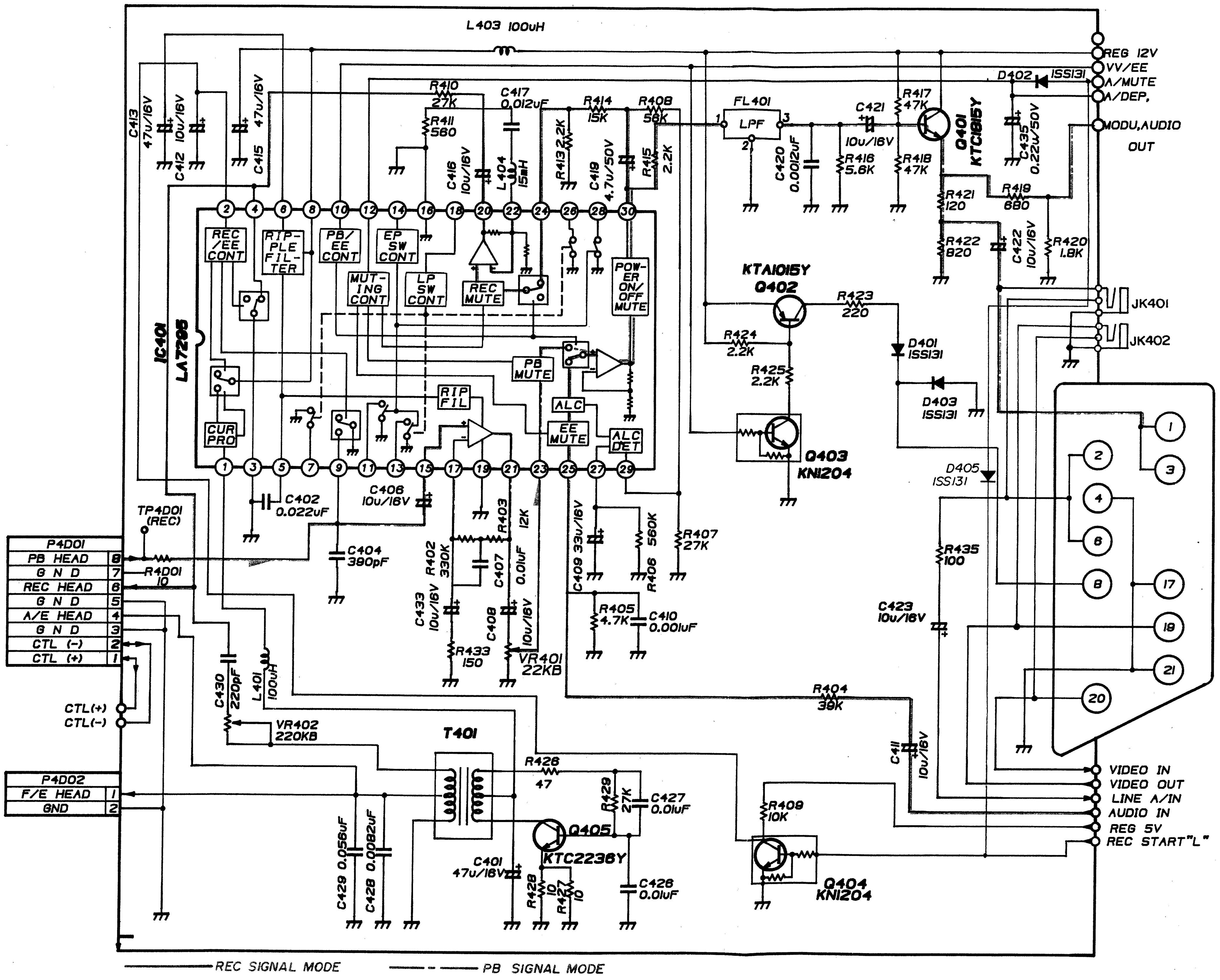
(Voltage : 220V only)


P1501
13 REG 5.2V
12 REG 5VA
11 GND
10 REG 12V
9 REG 12V
8 F/R "H"
7 P/C
6 AC 1.7V
5 AC 1.7V
4 M GND
3 UNREG 40VA
2 UNREG -40VA
1 GND
Q101 KTD1414
Q102 KTD1414
Q103 C1815(BL)
Q104 C1815(BL)
Q105 KN1203
Q106 KTC966-Y
Q107 KN1203
Q108 KN1203
Q109 KTC1015Y
IC101 AN7805
IC102 AN7806
L101 100u
R101 1K
R102 1k
R103 1K
R104 1K
R105 4.7K
R106 1.5K
R107 100K
R108 120
R109 15K
R110 10K
ZD101 UZ13BL
ZD102 UZ15BL
ZD103 UZ13BL
ZD104 33V
ZD105 5.6V
ZD106 33V
D101-104 1N5393
D105-108 1N5393
D109 1N4003
D110 1N4003
D111 1N4003
D112 D113 D114 1SS131
C101 0.022uF
C102 0.022uF
C103 4700/35V
C104 2200uF/16V
C105 47/16V
C106 47/16
C107 47/16
C108 47/16V
C109 0.01UF
C110 47/16
C111 47/16V
C112 0.01UF
C114 47/16V
C115 47/16
C116 10/50V
C117 47/50V
C119 0.022UF
C120 0.022uF
C121 100/63V
C122 0.022UF
C123 0.022UF
C124 100/63V
F101 T500mA/250V
F102 T2.5A/250V
F103 T2.5A/250V
AC15V 1.8A
AC 9V 1.0A
CL101 0.0047UF
PT101
BR
BL
AC INPUT

(Voltage : 110V/220V Dual)


P1501
13 REG 5.2V
12 REG 5VA
11 GND
10 REG 12V
9 REG 12V
8 F/R "H"
7 P/C
6 AC 1.7V
5 AC 1.7V
4 M GND
3 UNREG 30VA
2 UNREG -30VA
1 GND
Q101 KTD1414
Q102 KTD1414
Q103 C1815(BL)
Q104 C1815(BL)
Q105 KN1203
Q106 KTC966-Y
Q107 KN1203
Q108 KN1203
Q109 KTC1015Y
IC101 AN7805
IC102 AN7806
L101 100u
R101 1K
R102 1k
R103 1K
R104 1K
R105 4.7K
R106 1.5K
R107 100K
R108 120
R109 15K
R110 10K
ZD101 UZ13BL
ZD102 UZ15BL
ZD103 UZ13BL
ZD104 33V
ZD105 5.6V
ZD106 33V
D101-104 1N5393
D105-108 1N5393
D109 1N4003
D110 1N4003
D111 1N4003
D112 D113 D114 1SS131
C101 0.022uF
C102 0.022uF
C103 4700/35V
C104 2200uF/16V
C105 47/16V
C106 47/16
C107 47/16
C108 47/16V
C109 0.01UF
C110 47/16
C111 47/16V
C112 0.01UF
C114 47/16V
C115 47/16
C116 10/50V
C117 47/50V
C119 .022uF
C120 .022uF
C121 100/63V
C122 .022uF
C123 .022uF
C124 100/63V
F101 T500mA/250V
F102 T2.5A/250V
F103 T2.5A/250V
F104 T630mA/250V
VOLTAGE SELECTOR SW
220V
110V
220V COM 110V
AC15V 1.8A
AC 9V 1.0A
CL101 0.0047UF
PT101
BR
BL
AC INPUT

2. Audio Circuit Diagram


L403 100uH
REG 12V
VV/EE
A/MUTE
A/DEP.
MODU,AUDIO OUT
D402 1SS131
FL401
LPF
C421 10u/16V
R417 47K
Q401 KTC1815Y
C435 0.22u/50V
R410 27K
R411 560
C417 0.012uF
R414 15K
R408 56K
C413 47u/16V
C412 10u/16V
C415 47u/16V
C416 10u/16V
L404 15mH
R413 2.2K
C419 4.7u/50V
R415 2.2K
C420 0.0012uF
R416 5.6K
R418 47K
R421 120
R419 680
R422 820
C422 10u/16V
R420 1.8K
JK401
JK402
REC/EE CONT
RIP-PLE FIL-TER
PB/EE CONT
EP SW CONT
MUT-ING CONT
LP SW CONT
REC MUTE
POW-ER ON/OFF MUTE
IC401 LA7295
PB MUTE
RIP FIL
ALC
EE MUTE
ALC DET
CUR PRO
KTA1015Y Q402
R423 220
R424 2.2K
R425 2.2K
D401 1SS131
D403 1SS131
Q403 KN1204
D405 1SS131
R435 100
C423 10u/16V
TP4D01 (REC)
C402 0.022uF
C406 10u/16V
C404 390pF
R403 12K
R402 330K
C407 0.01uF
C433 10u/16V
C408 10u/16V
R433 150
VR401 22KB
C409 33u/16V
R406 560K
R407 27K
R405 4.7K
C410 0.001uF
P4D01
PB HEAD 8
G N D 7
REC HEAD 6
G N D 5
A/E HEAD 4
G N D 3
CTL (-) 2
CTL (+) 1
R4D01 10
CTL(+)
CTL(-)
C430 220pF
L401 100uH
VR402 220KB
T401
R404 39K
C411 10u/16V
P4D02
F/E HEAD 1
GND 2
R426 47
R429 27K
C427 0.01uF
Q405 KTC2236Y
C401 47u/16V
R428 10
R427 10
C426 0.01uF
C429 0.056uF
C428 0.0082uF
R409 10K
Q404 KN1204
VIDEO IN
VIDEO OUT
LINE A/IN
AUDIO IN
REG 5V
REC START"L"
1
2
3
4
6
8
17
19
20
21
REC SIGNAL MODE
PB SIGNAL MODE
5
4
3
2
1
A
B
C
D
E
F
G
H

EE/REC

IC401 LA7295					
1	0/10.3	12	0/0	23	0/0
2	0/5	13	0/0	24	0/0
3	0/0	14	0/0	25	0/0
4	0/0	15	2.5/2.2	26	0/0
5	8/7.8	16	0/0	27	0.3/0.2
6	9/8.6	17	2.5/2.2	28	0/0
7	0/0	18	0/0	29	0/0
8	12/15.5	19	0/0	30	3.5/3.2
9	0/0	20	4/3.5		
10	0/0	21	2.5/2.3		
11	0/0	22	1.5/1.5		

PB/REC

	TR		
	B	C	E
Q401	5.5/5.5	12/12	5/5
Q402	11/12	0/12	5/12
Q403	5/0	0/12	0/0
Q404	5/0	0/5	0/0
Q405	0/0.5	0/10	0/0.5

SCART PIN SIGNAL NAME

1) 3), AUDIO OUT

2) 6), AUDIO IN

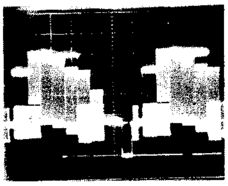
8), PB 12V

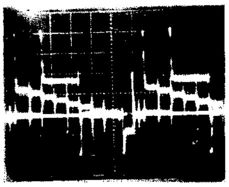
20), VIDEO IN

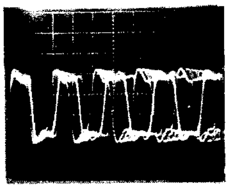
19), VIDEO OUT

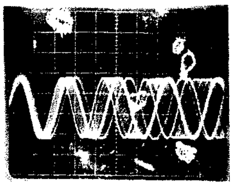
4) 17) 21), GROUND

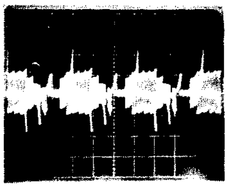
* Y/C Oscilloscope Waveform

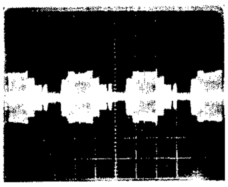
①

REC
VIDEO in
20μs/div, 20mV/div

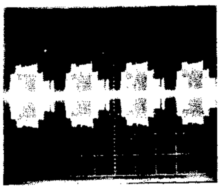
②

REC
IC301 2 pin
White, Dark clip
20μs/div, 20mV/div

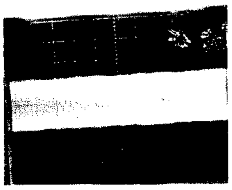
③

REC
IC301 30 pin
FM Modulation Out Put
0.1μs/div, 50mV/div

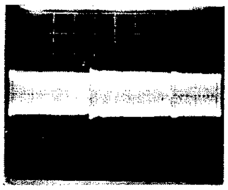
④

REC
REC EQ Out Put
0.1μs/div, 10mV/div

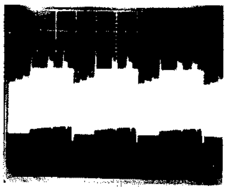
⑤

REC
IC302 5 pin
20μs/div, 20mV/div

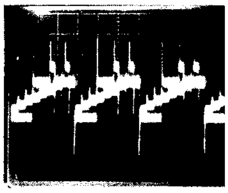
⑥

REC
IC302 3 pin
4.43 MHz B.P.F. Out Put
20μs/div, 5mV/div

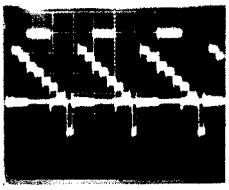
⑦

REC
IC302 23 pin
REC Color Out Put

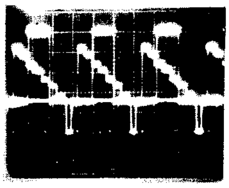
⑧

IC302 11 pin
5.06MHz Out Put
20μs/div, 5mV/div

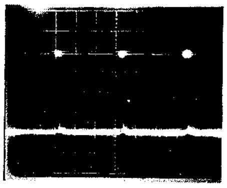
⑨

PB
RF TP
5ms/div, 20mV/div

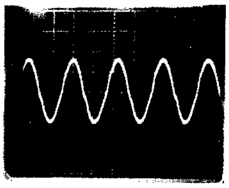
⑩

PB
IC301 7 pin
Demodulation Out Put
20μs/div, 50mV/div

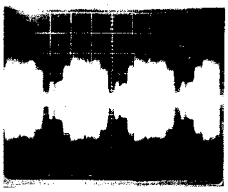
⑪

PB
3ML•P•F Out Put
20μs/div, 10mV/div

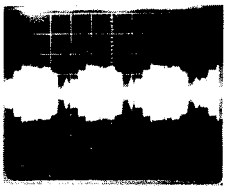
⑫

PB
IC301 9 pin
20μs/div, 10mV/div

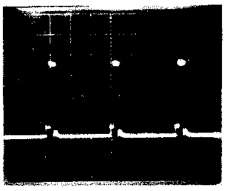
⑬

PB
IC301 14 pin
20μs/div, 10mV/div.

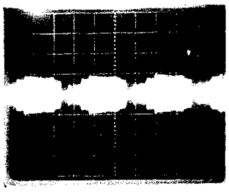
⑭

PB/REC
IC301 17 pin
H. SYNC
20μs/div, 1V/div

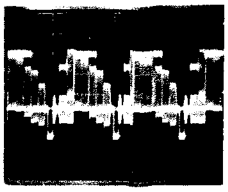
⑮

PB/REC (2 fsc)
IC304 7 pin
10mv/div, 50μs/div

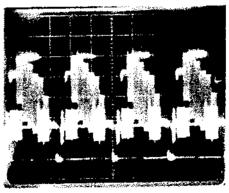
⑯

PB
IC302 7 pin
20μs/div, 10mV/div

⑰

PB
IC302 24 pin
20μs/div, 10mV/div

⑱

PB/REC
IC302 14 pin
H, SYNC input
20μs/div, 1V/div

⑲

P/B
IC301 19 pin
Color Out Put
20μs/div, 20mV/div

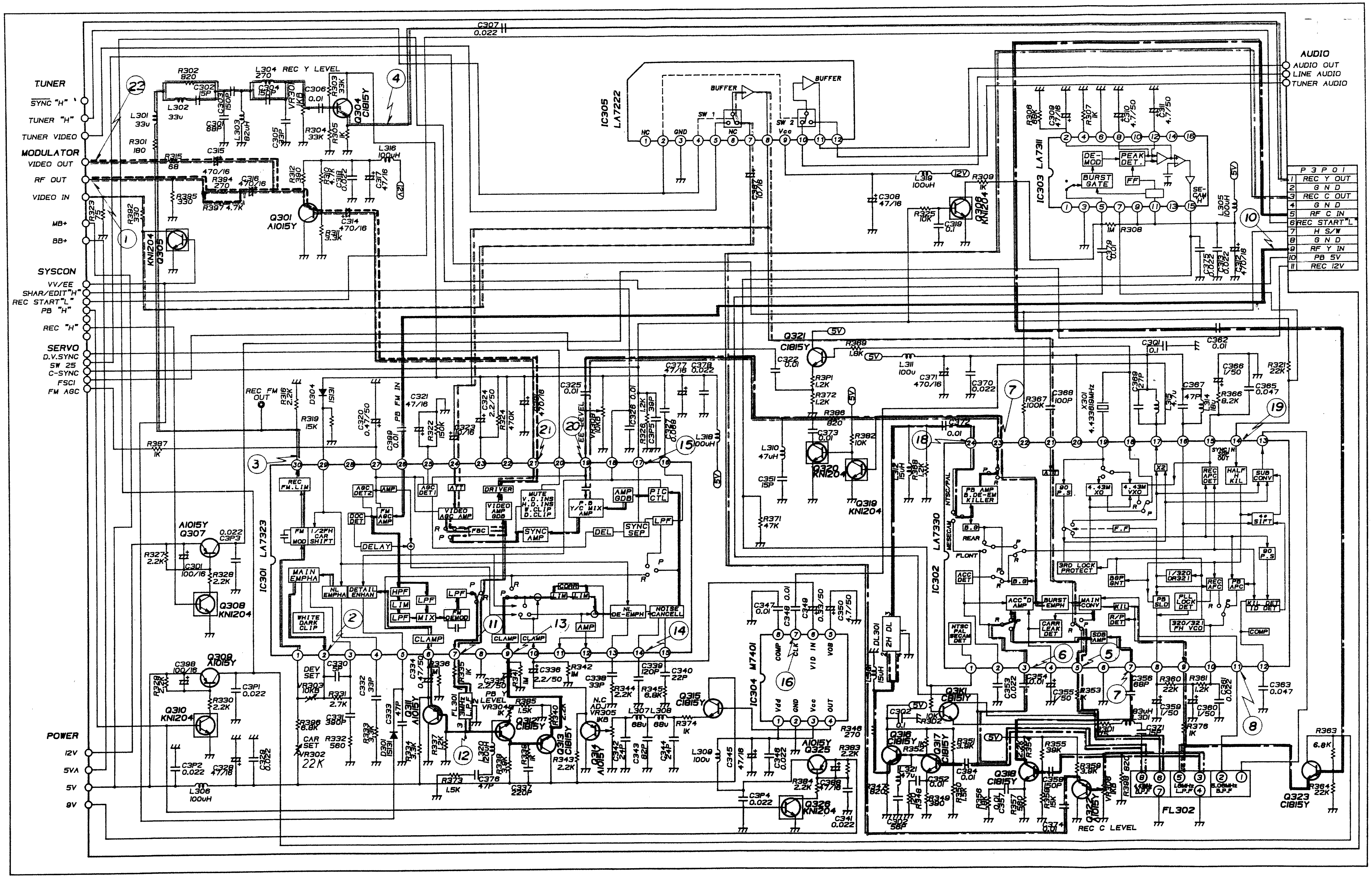
⑳

PB/REC
IC301 21 pin
20μs/div, 50m V/div

㉑

PB
VIDEO TP
VIDEO Out Put
20μs/div, 20mV/div

IC NO. / MODE / Pin NO.	IC301		IC302		IC303		IC304		IC305	
	PB	REC	PB	REC	PB	REC	PB	REC	PB	REC
1	3.67	2.38	0.16	0.17	3.97	3.97	9.12	0.01	0.13	0.01
2	2.59	2.67	2.08	1.41	0.04	0.05	0.01	0.01	4.92	0.02
3	2.19	2.67	3.10	3.1	0	0	9.12	0.01	0.01	0.01
4	2.76	3.49	0.05	2.45	0.40	0.40	3.37	0.01	4.92	0.02
5	4.49	2.86	2.60	1.61	0.02	0.07	3.45	3.	8.0	8.07
6	1.13	3.52	0	0	0	0	2.59	0.01	0.06	0.09
7	2.47	2.82	3.10	3.1	0.58	0.49	1.73	0.01	8.06	8.02
8	0.01	0.01	2.69	2.7	2.36	2.24	5.31	0.08	7.33	7.34
9	3.42	0.94	2.08	1.82	4.87	4.88			12.0	12.09
10	3.42	3.23	2.70	2.5	0	0			8.05	8.01
11	0.06	3.59	2.53	2.5	4.87	4.88			7.34	7.34
12	2.98	3.07	2.04	1.9	2.37	2.27			8.01	8.06
13	3.24	4.40	4.54	4.5	4.8	0.07				
14	3.23	4.40	0.56	0.49	0	0.01				
15	4.06	4.44	2.28	2.29	0.17	0.17				
16	3.44	3.51	4.90	4.90	1.27	0.57				
17	0.34	0.35	4.89	4.90						
18	2.49	2.50	2.27	3.0						
19	4.26	4.29	3.80	3.81						
20	0	0	4.89	4.9						
21	2.45	2.65	1.61	1.62						
22	4.95	4.93	2.53	2.54						
23	3.05	3.38	1.93	2.32						
24	3.17	3.17	3.3	0.07						
25	3.88	2.99								
26	3.60	4.00								
27	0.98	1.47								
28	0.02	0.01								
29	3.40	4.42								
30	4.14	3.52								

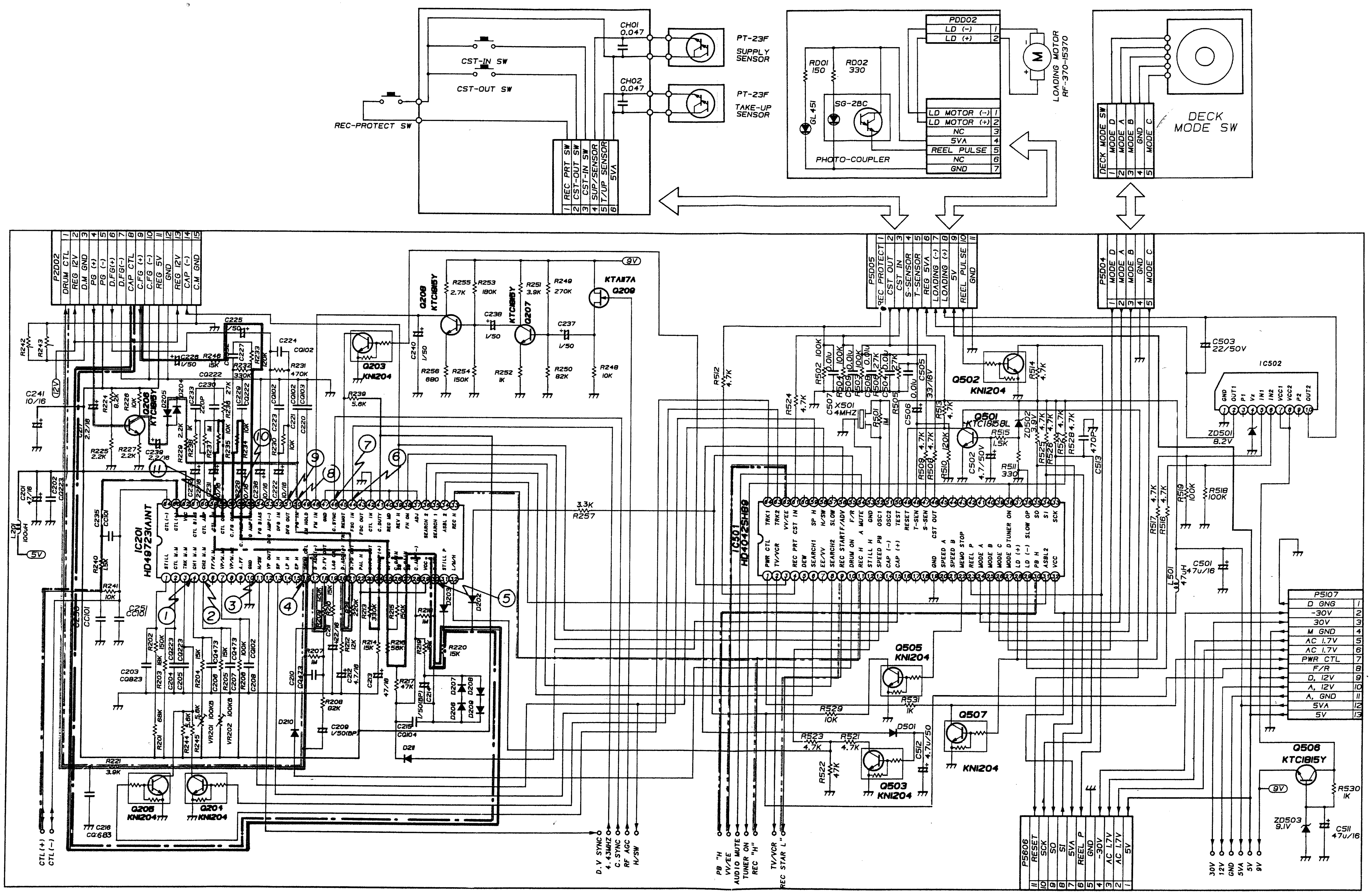
Terminal / MODE / TR NO.	EMITTER		COLECTOR		BASE	
	PB	REC	PB	REC	PB	REC
Q301	5.75	5.7	0.01	0	5.08	5.0
Q304	1.60	1.6	4.90	4.9	2.24	2.26
Q305	0.01	0.01	0.01	0.48	4.9	0.42
Q306	0	0	3.96	3.96	0.15	0.31
Q307	12.22	12.1	0	12.0	12.22	11.28
Q308	0.01	0	12.21	0.09	0.02	4.8
Q309	5.05	5.07	4.96	0	4.28	5.07
Q310	0	0	0	5.07	4.9	0.03
Q311	1.81	2.11	0	0	1.22	1.51
Q312	0.02	0.92	3.54	2.92	2.22	1.51
Q313	2.92	2.31	5.04	5.06	3.54	2.93
Q314	0.52	0.64	0.01	0.01	0.91	0.02
Q315	2.77	0.05	5.04	5.06	3.4	0.15
Q316	2.43	2.42	4.89	4.9	3.08	3.0
Q317	0.72	0.71	0.05	3.09	0.05	1.25
Q318	0.72	0.72	2.25	2.25	1.35	1.25
Q319	5.06	0	4.96	0.06	4.28	2.23
Q320	0	0	0.06	0.01	0.07	0.06
Q321	1.63	2.32	4.89	4.9	2.21	0.02
Q322	1.60	0.83	0	0	0.99	0.22
Q323	2.46	0.54	4.96	0	3.14	0
Q325	9.25	0	9.21	0.01	8.49	9.26
Q326	0	0.01	0.08	9.25	4.8	0.03
Q3K1	3.8	0. 9	2.6	0.6	0.17	0.17

3. Y/C Circuit Diagram


TUNER
SYNC "H"
TUNER "H"
TUNER VIDEO
MODULATOR
VIDEO OUT
RF OUT
VIDEO IN
MB+
BB+
SYSCON
VV/EE
SHAR/EDIT"H"
REC START"L"
PB "H"
REC "H"
SERVO
D.V.SYNC
SW 25
C-SYNC
FSCI
FM AGC
POWER
12V
5VA
5V
9V
AUDIO
AUDIO OUT
LINE AUDIO
TUNER AUDIO
P3P01
1 REC Y OUT
2 GND
3 REC C OUT
4 GND
5 RF C IN
6 REC START "L"
7 H S/W
8 GND
9 RF Y IN
10 PB 5V
11 REC 12V
IC301 LA7323
IC302 LA7330
IC303 LA7311
IC304 M7401
IC305 LA7222
Q301 A1015Y
Q304 C1815Y
Q305 KN1204
Q307 A1015Y
Q308 KN1204
Q309 A1015Y
Q310 KN1204
Q311 A1015Y
Q312 C1815Y
Q313 C1815Y
Q314 A1015Y
Q315 C1815Y
Q316 C1815Y
Q317 C1815Y
Q318 C1815Y
Q319 KN1204
Q320 KN1204
Q321 C1815Y
Q323 C1815Y
Q325 A1015Y
Q326 KN1204
Q341 C1815Y
L304 REC Y LEVEL
REC FM OUT
BUFFER
SW 1
SW 2
DE-MOD
PEAK DET.
BURST GATE
FF
REC FM.LIM
AGC DET2
AMP
FM AGC AMP
AGC DET
ATT
VIDEO AGC AMP
DRIVER
VIDEO AMP GDB
MUTE V.D.INS H.D.INS W.CLIP D.CLIP
P.B Y/C MIX AMP
AMP GDB
PIC CTL
SYNC AMP
SYNC SEP
DEL
LPF
DOC DET
FM MOD
1/2FH CAR SHIFT
DELAY
MAIN EMPHA
NL EMPHA
DETAIL ENHAN
HPF
LIM
LPF
MIX
FM DEMOD
CORR
NL DE-EMPH
NOISE CANCELL
WHITE DARK CLIP
CLAMP
PB AMP B.DE-EM KILLER
ACC DET
ACC'D AMP
BURST EMPH
MAIN CONV
CARR LEAK DET
NTSC PAL SECAM DET
SDB AMP
R/P DET
KIL
3RD LOCK PROTECT
BGP GNT
PB SLD
1/320 OR321
PLL LOCK DET
320/321 FH VCO
REC AFC
PB APC
KIL DET ID DET
COMP
90 P.S
4.43M XO
4.43M VXO
X2
HALF H KIL
SUB CONV
4× SIFT
F.F
REC C LEVEL
PB Y LEVEL VR304
N.C ADJ VR305
DEV SET VR303
CAR SET VR302
FL301
FL302
DL301 2H DL
X301 4.433619MHz
C307 0.022
REC
FLONT
NTSC/PAL
MESECAM
A
B
C
D
E
F
G
1
2
3
4
5

——— REC-Y SIGNAL
—·—·— REC-C SIGNAL
- - - - - EE COMPOSITE SIGNAL
○ WAVEFORM
——— PB-Y SIGNAL
— — — PB-C SIGNAL
- - - - PB COMPOSITE SIGNAL

4. Servo/System Control Circuit Diagram


CST-IN SW
CST-OUT SW
REC-PROTECT SW
CH01 0.047
CH02 0.047
PT-23F SUPPLY SENSOR
PT-23F TAKE-UP SENSOR
1 REC PRT SW
2 CST-OUT SW
3 CST-IN SW
4 SUP/SENSOR
5 T/UP SENSOR
6 5VA
PDD02
LD (-)
LD (+)
LOADING MOTOR RF-370-15370
RD01 150
RD02 330
SG-2BC
GL451
PHOTO-COUPLER
LD MOTOR (-)
LD MOTOR (+)
NC
5VA
REEL PULSE
NC
GND
DECK MODE SW
MODE D
MODE A
MODE B
GND
MODE C
P2D02
DRUM CTL
REG 12V
D.M GND
PG (+)
PG (-)
D.FG(+)
D.FG(-)
CAP CTL
C.FG (+)
C.FG (-)
REG 5V
GND
REG 12V
CAP CTL
C.M GND
P5D05
REC PROTECT
CST OUT
CST IN
S-SENSOR
T-SENSOR
REG 5VA
LOADING (-)
LOADING (+)
5V
REEL PULSE
GND
P5D04
Q208 KTC1815Y
Q207 KTC1815Y
KTA1117A Q209
Q203 KN1204
Q206 KTC1815Y
Q205 KN1204
Q204 KN1204
IC201 HD49723IAINT
IC501 HD404258H89
IC502
Q502 KN1204
Q501 KTC1858L
Q505 KN1204
Q507 KN1204
Q503 KN1204
Q506 KTC1815Y
X501 4MHZ
ZD501 8.2V
ZD503 9.1V
C511 47u/16
R530 1K
R257 3.3K
L201 100uH
P5107
D GNG
-30V
30V
M GND
AC 1.7V
AC 1.7V
PWR CTL
F/R
D, 12V
A, 12V
A, GND
5VA
5V
P5806
RESET
SCK
SO
SI
5VA
REEL P
GND
-30V
AC 1.7V
AC 1.7V
5V
CTL(+)
CTL(-)
D.V SYNC
4.43MHZ
C.SYNC
RF AGC
H/SW
PB "H"
VV/EE
AUDIO MUTE
TUNER ON
REC "H"
TV/VCR
REC STAR L
30V
12V
GND
5VA
5V
9V
A
B
C
D
E
F
G
H
1
2
3
4
5

DRUM SPEED CONTROL
DRUM PHASE CONTROL
PB SIGNAL MODE
CAPSTAN SPEED CONTROL
CAPSTAN PHASE CONTROL
WAVEFORM
REC SIGNAL MODE

(* P:Pulse)

IC No. / MODE / PIN No.	IC 501 STOP	IC 501 PB	IC 501 REC
1	0	0	0
2	5.02	5.02	5.02
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	4.98	0	4.98
8	0	0	0
9	4.90	4.90	0
10	4.96	0	0
11	0	0	4.92
12	0.47	0.47	0.47
13	0	0	0
14	0	0	0
15	4.96	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	–	P	P
24	5.02	0	0
25	0	5.02	5.02
26	5.03	5.02	5.02
27	0	0	0
28	0	0	0
29	0	5.02	0
30	0	0	0
31	5.04	5.04	5.04
32	P	P	P
33	P	P	P
34	P	P	P
35	5.04	5.04	5.04
36	5.03	5.02	5.02
37	5.03	5.02	5.02
38	5.03	0	5.02
39	0	0	0
40	0	0	0
41	0	0	0
42	0	0	0
43	0	0	0
44	0	0	0
45	5.04	5.03	5.04
46	0	0	0
47	0	0	0
48	0	0	0
49	0	0	0
50	5.04	5.04	5.04
51	2.27	2.27	2.27
52	2.46	2.46	2.46
53	0	0	0
54	0	0	0
55	0	0	0
56	0	0	0
57	0	0	0
58	0	P	P
59	0	5.04	5.07
60	5.08	0	0
61	0	0	0
62	0.44	4.93	0.41
63	5.02	5.02	5.02
64	0	0	0

(* P:Pulse)

IC No. / MODE / PIN No.	IC 502 STOP	IC 502 PB	IC 502 REC
1	0	0	0
2	0.54	0.53	0.53
3	0.75	0.75	0.75
4	0.78	0.40	1.05
5	0	0	0
6	0	0	0
7	12.84	12.73	12.73
8	12.83	12.72	12.73
9	0.76	0.76	0.75
10	0.54	0.53	0.53

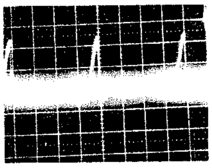
TERMINAL / MODE / TR No.	EMITTER STOP	EMITTER PB	EMITTER REC	COLLECTOR STOP	COLLECTOR PB	COLLECTOR REC	BASE STOP	BASE PB	BASE REC
Q501	0	0	0	5.79	5.79	5.78	0	0	0
Q503	-31.8	-31.8	-31.8	-44	-44	-44	-32.3	-32.3	-32.3
Q504	0	0	0	0	0	0	0	0	0
Q505	0	0	0	0.58	0.58	0.58	0	0	0
Q506	0	0	0	–	P	P	–	P	P
Q508	0	0	0	0	0	0	0	0	0
Q509	0	0	0	0	0	0	4.96	4.96	4.96

(* P:Pulse)

IC No. / MODE / PIN No.	IC 503 STOP	IC 503 PB	IC 503 REC
1	5.04	5.04	5.04
2	0	0	0
3	0	0	0

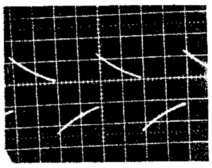
*SERVO Oscilloscope Waveform

①
②



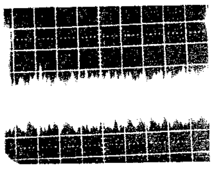
4 pin 5 pin
CH1, CH2 MM
1V/div
2.5Vp-p

③



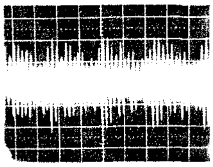
TP201 11 pin
Head Switching
2.5Vp-p

④



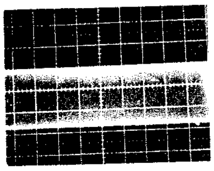
16 pin
Drum Motor Control
1.5Vp-p

⑤



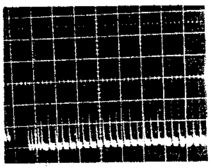
30 pin
Capstan Motor Control
2.5Vp-p

⑥



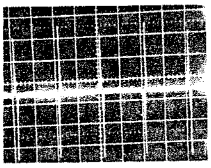
44 pin
FSC IN
2.5Vp-p

⑦



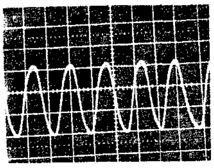
46 pin
C. SYNC IN
4Vp-p

⑧



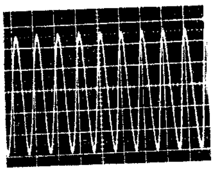
PG IN
50 pin
2.2Vp-p

⑨



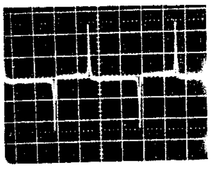
51 pin
D.FG OUT
2.7Vp-p

⑩



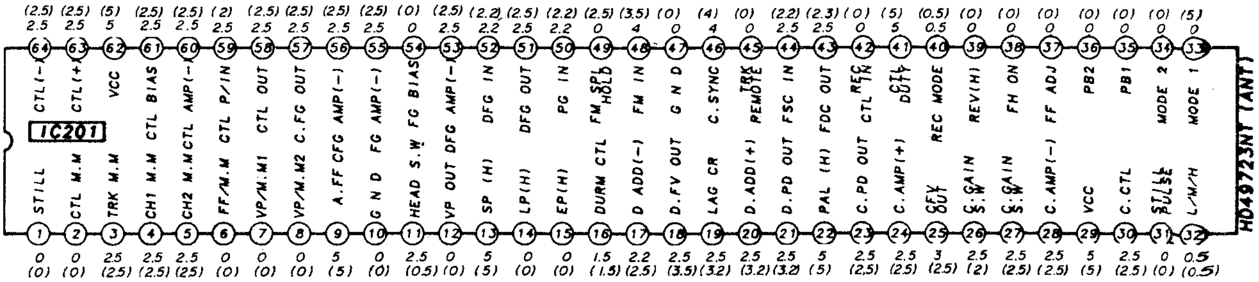
57 pin
C.FG OUT
2.5Vp-p

⑪



58 pin
CTL OUT
2.3Vp-p

*SERVO IC Voltage Sheet

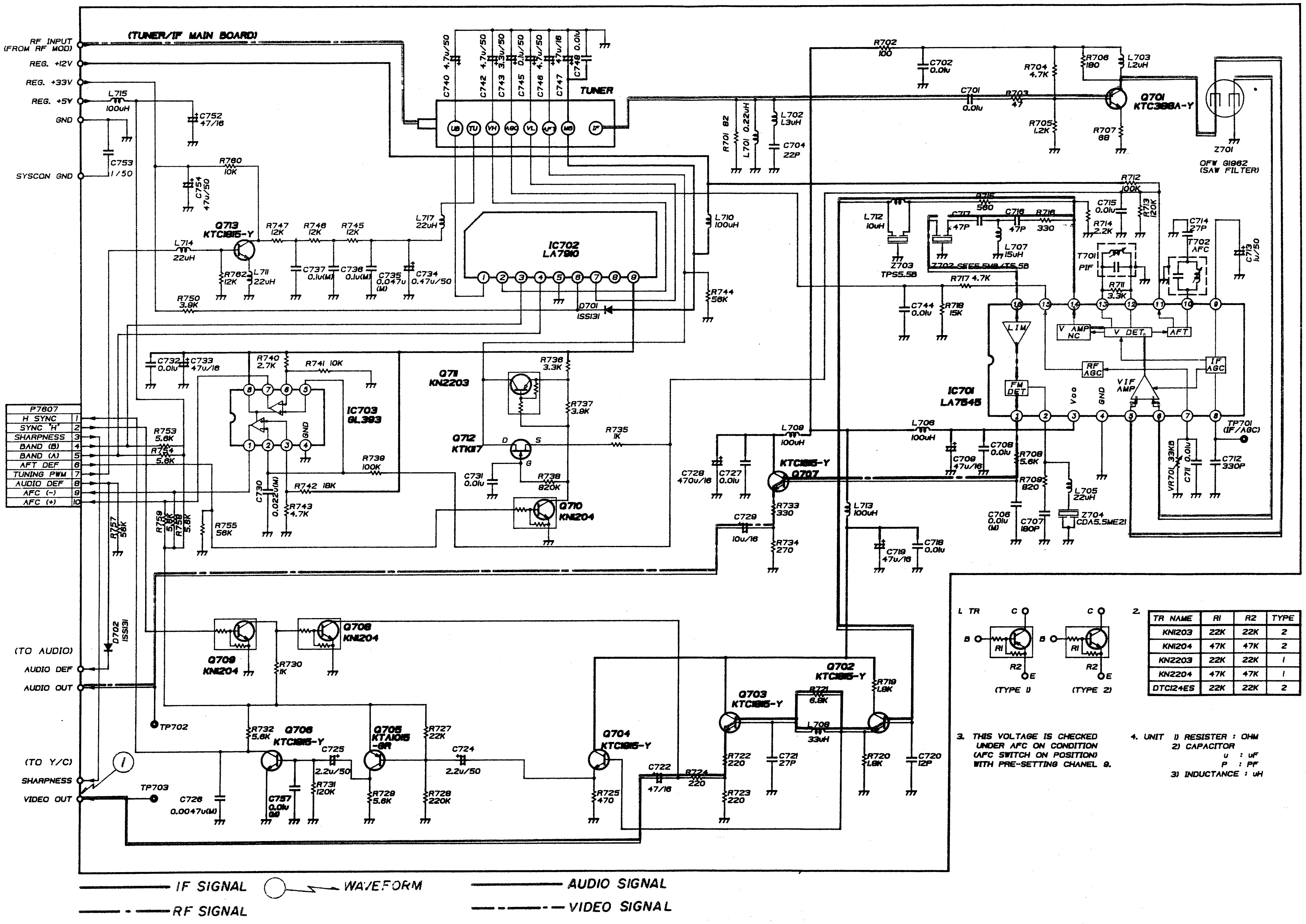


1	STILL	0	(0)
2	CTL M.M	0	(0)
3	TRK M.M	2.5	(2.5)
4	CH1 M.M	2.5	(2.5)
5	CH2 M.M	2.5	(2.5)
6	FF/M.M	0	(0)
7	VP/M.M1	0	(0)
8	VP/M.M2	0	(0)
9	A.FF	5	(5)
10	G N D	0	(0)
11	HEAD S.W	2.5	(0.5)
12	VP OUT	0	(0)
13	SP (H)	5	(5)
14	LP(H)	0	(0)
15	EP(H)	0	(0)
16	DURM CTL	1.5	(1.5)
17	D ADD(−)	2.2	(2.5)
18	D.FV OUT	2.5	(3.5)
19	LAG CR	2.5	(3.2)
20	D.ADD(+)	2.5	(3.2)
21	D.PD OUT	2.5	(3.2)
22	PAL (H)	5	(5)
23	C.PD OUT	2.5	(2.5)
24	C.AMP(+)	2.5	(2.5)
25	CFV OUT	3	(2.5)
26	C.GAIN S.W	2.5	(2)
27	C.GAIN S.W	2.5	(2.5)
28	C.AMP(−)	2.5	(2.5)
29	VCC	5	(5)
30	C.CTL	2.5	(2.5)
31	STILL PULSE	0	(0)
32	L/M/H	0.5	(0.5)
33	MODE 1	0	(5)
34	MODE 2	0	(0)
35	PB1	0	(0)
36	PB2	0	(0)
37	FF ADJ	0	(0)
38	FH ON	0	(0)
39	REV(H)	0	(0)
40	REC MODE	0.5	(0.5)
41	CTL DUTY	5	(5)
42	CTL REC TR	0	(0)
43	FDC OUT	2.5	(2.3)
44	FSC IN	2.5	(2.2)
45	TRK REMOTE	0	(0)
46	C.SYNC	4	(4)
47	G N D	0	(0)
48	FM IN	4	(3.5)
49	FM SPL HOLD	0	(2.5)
50	PG IN	2.2	(2.2)
51	DFG OUT	2.5	(2.5)
52	DFG IN	2.2	(2.2)
53	DFG AMP(−)	2.5	(2.5)
54	FG BIAS	0	(0)
55	FG AMP(−)	2.5	(2.5)
56	CFG AMP(−)	2.5	(2.5)
57	C.FG OUT	2.5	(2.5)
58	CTL OUT	2.5	(2.5)
59	CTL P/IN	2.5	(2)
60	CTL AMP(−)	2.5	(2.5)
61	CTL BIAS	2.5	(2.5)
62	VCC	5	(5)
63	CTL(+)	2.5	(2.5)
64	CTL(−)	2.5	(2.5)

* SERVO Transistor Voltage Sheet

TR NO.	EMITTER		BASE		COLLECTOR	
	PB	REC	PB	REC	PB	REC
Q204	0	0	0	0	0	5
Q205	0	0	0	5	0	5
Q206	1	1	1.5	1.5	2.5	2.5

5. Tuner/IF Circuit Diagram


(TUNER/IF MAIN BOARD)
RF INPUT (FROM RF MOD)
REG. +12V
REG. +33V
REG. +5V
GND
SYSCON GND
L715 100uH
C752 47/16
C753 1/50
C754 47u/50
R780 10K
Q713 KTC1815-Y
L714 22uH
R782 12K
L711 22uH
R747 12K
R746 12K
R745 12K
C737 0.1u(M)
C736 0.1u(M)
C735 0.047u (M)
C734 0.47u/50
L717 22uH
R750 3.9K
C740 4.7u/50
C742 4.7u/50
C743 3.3u/50
C745 0.1u/50
C746 4.7u/50
C747 47u/16
C748 0.01u
TUNER
UB
TU
VH
AGC
VL
AFT
MB
IF
IC702 LA7910
D701 1SS131
L710 100uH
R744 56K
R701 82
L701 0.22uH
L702 1.3uH
C704 22P
R702 100
C702 0.01u
C701 0.01u
R703 47
R704 4.7K
R705 1.2K
R706 180
L703 1.2uH
R707 68
Q701 KTC388A-Y
Z701
OFW G1962 (SAW FILTER)
R712 100K
R713 120K
C715 0.01u
R714 2.2K
R715 560
C717 47P
C716 47P
R716 330
L712 10uH
Z703 TPS5.5B
Z702 SFE5.5MB/TE5.5B
L707 15uH
T701 PIF
R711 3.3K
C714 27P
T702 AFC
C713 1u/50
R717 4.7K
C744 0.01u
R718 15K
LIM
V AMP NC
V DET.
AFT
RF AGC
IF AGC
VIF AMP
FM DET
Vcc
GND
IC701 LA7545
TP701 (IF/AGC)
VR701 33KB
C711 0.01u
C712 330P
L706 100uH
C709 47u/16
C708 0.01u
R708 5.6K
R709 820
L705 22uH
C706 0.01u (M)
C707 180P
Z704 CDA5.5ME21
P7807
H SYNC 1
SYNC 'H' 2
SHARPNESS 3
BAND (B) 4
BAND (A) 5
AFT DEF 6
TUNING PWM 7
AUDIO DEF 8
AFC (-) 9
AFC (+) 10
C732 0.01u
C733 47u/16
R740 2.7K
R741 10K
IC703 GL393
R739 100K
R742 18K
R743 4.7K
C730 0.022u(M)
R753 5.6K
R754 5.6K
R757 56K
R759 5.6K
R758 5.6K
R755 56K
Q711 KN2203
R736 3.3K
R737 3.9K
Q712 KTK117
D
S
G
R735 1K
C731 0.01u
R738 820K
Q710 KN1204
L709 100uH
C728 470u/16
C727 0.01u
KTC1815-Y Q707
R733 330
C729 10u/16
R734 270
L713 100uH
C719 47u/16
C718 0.01u
D702 1SS131
(TO AUDIO)
AUDIO DEF
AUDIO OUT
TP702
(TO Y/C)
SHARPNESS
VIDEO OUT
1
TP703
Q709 KN1204
Q708 KN1204
R730 1K
R732 5.6K
Q706 KTC1815-Y
C725 2.2u/50
C726 0.0047u(M)
C757 0.01u (M)
R731 120K
Q705 KTA1015-GR
R729 5.6K
R727 22K
R728 220K
C724 2.2u/50
Q704 KTC1815-Y
R725 470
C722 47/16
R724 220
Q703 KTC1815-Y
R722 220
R723 220
C721 27P
Q702 KTC1815-Y
R721 6.8K
L708 33uH
R719 1.8K
R720 1.8K
C720 12P
IF SIGNAL
RF SIGNAL
WAVEFORM
AUDIO SIGNAL
VIDEO SIGNAL
L TR
B
C
E
R1
R2
(TYPE 1)
(TYPE 2)

2.

TR NAME	R1	R2	TYPE
KN1203	22K	22K	2
KN1204	47K	47K	2
KN2203	22K	22K	1
KN2204	47K	47K	1
DTC124ES	22K	22K	2

3. THIS VOLTAGE IS CHECKED
UNDER AFC ON CONDITION
(AFC SWITCH ON POSITION)
WITH PRE-SETTING CHANEL 9.

4. UNIT 1) RESISTER : OHM
2) CAPACITOR
u : uF
P : PF
3) INDUCTANCE : uH

5. IC/TR. PIN VOLTAGE

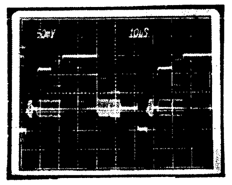
IC701 (LA7545)			
NO	VOLTAGE	NO	VOTAGE
1	5.45	9	9.53
2	5.01	10	9.05
3	11.57	11	5.48
4	0	12	6.56
5	4.45	13	6.56
6	4.45	14	4.64
7	3.23	15	6.29
8	9.53	16	1.94

IC703.GL393			
NO	VOTAGE	NO	VOLTAGE
1	0.08	5	5.47
2	5.47	6	9.1
3	2.39	7	0
4	0	8	11.55

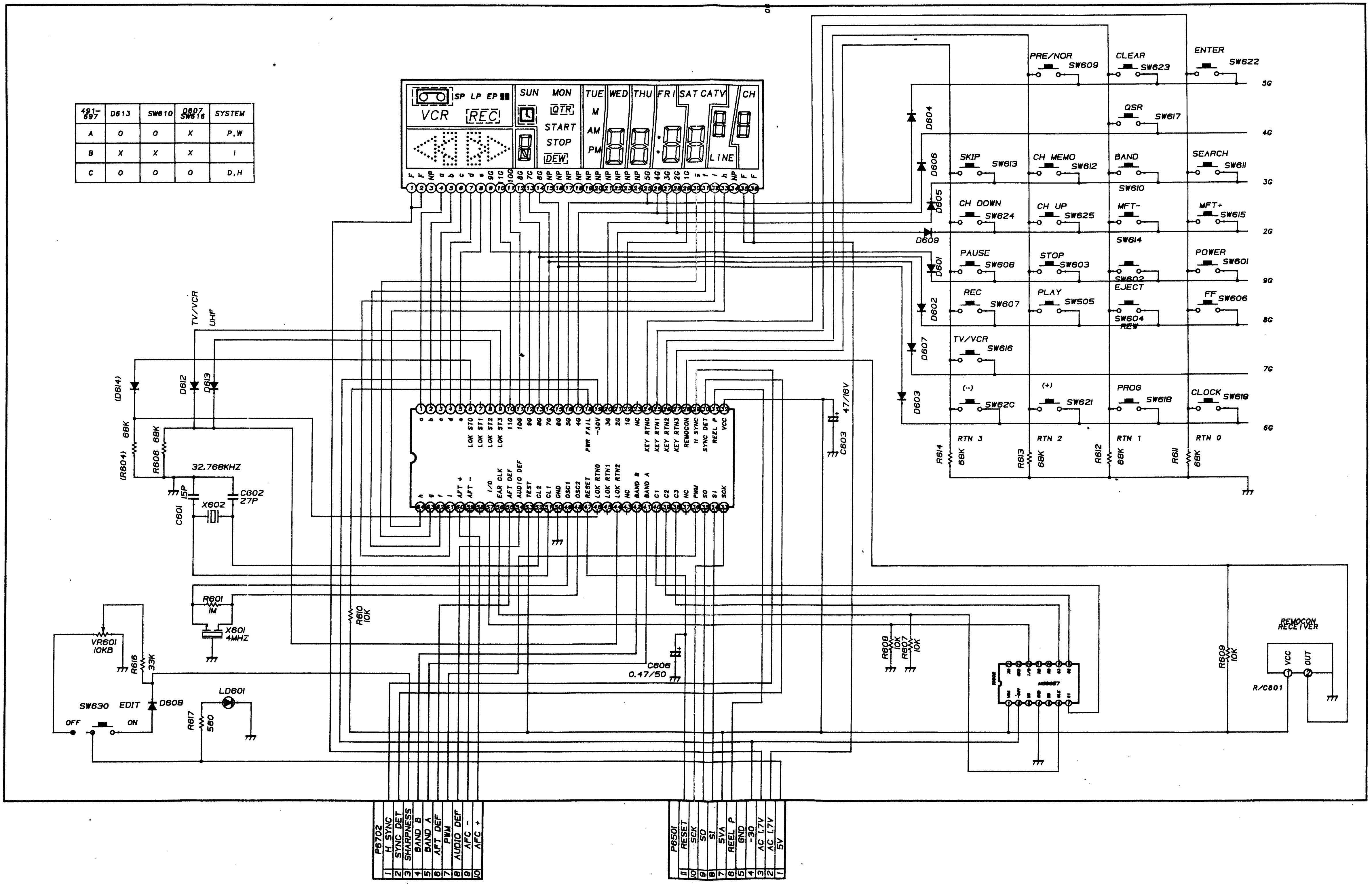
IC702.LA7910			
BAND SEL. POSION			
NO	VHF L	VHF H	UHF
1	0,12	0.12	11.34
2	0	11.39	0.01
3	0	4.54	0
4	4.53	0	0
5	0	0	0
6	13.07	13.06	13.08
7	11.41	0	0
8	1.19	0	0
9	11.55	11.55	11.53

TRANSISTOR PIN/VOLTAGE			
SYM/NO	B	C	E
Q701	1.80	10.09	1.07
Q702	4.21	3.53	3.52
Q703	2.85	11.75	3.52
Q704	3.52	11.75	2.85
Q705	5.07	6.65	5.02
Q706	-3.66	4.52	0
Q707	5.22	11.76	4.55
Q708	0.07	1.95	0
Q709	4.88	0.11	0
Q710	0	11.54	0.01
Q711	11.54	5.5	11.57
Q712	5.51	6.05	5.51
Q713	0.43	9.86	0.03

①



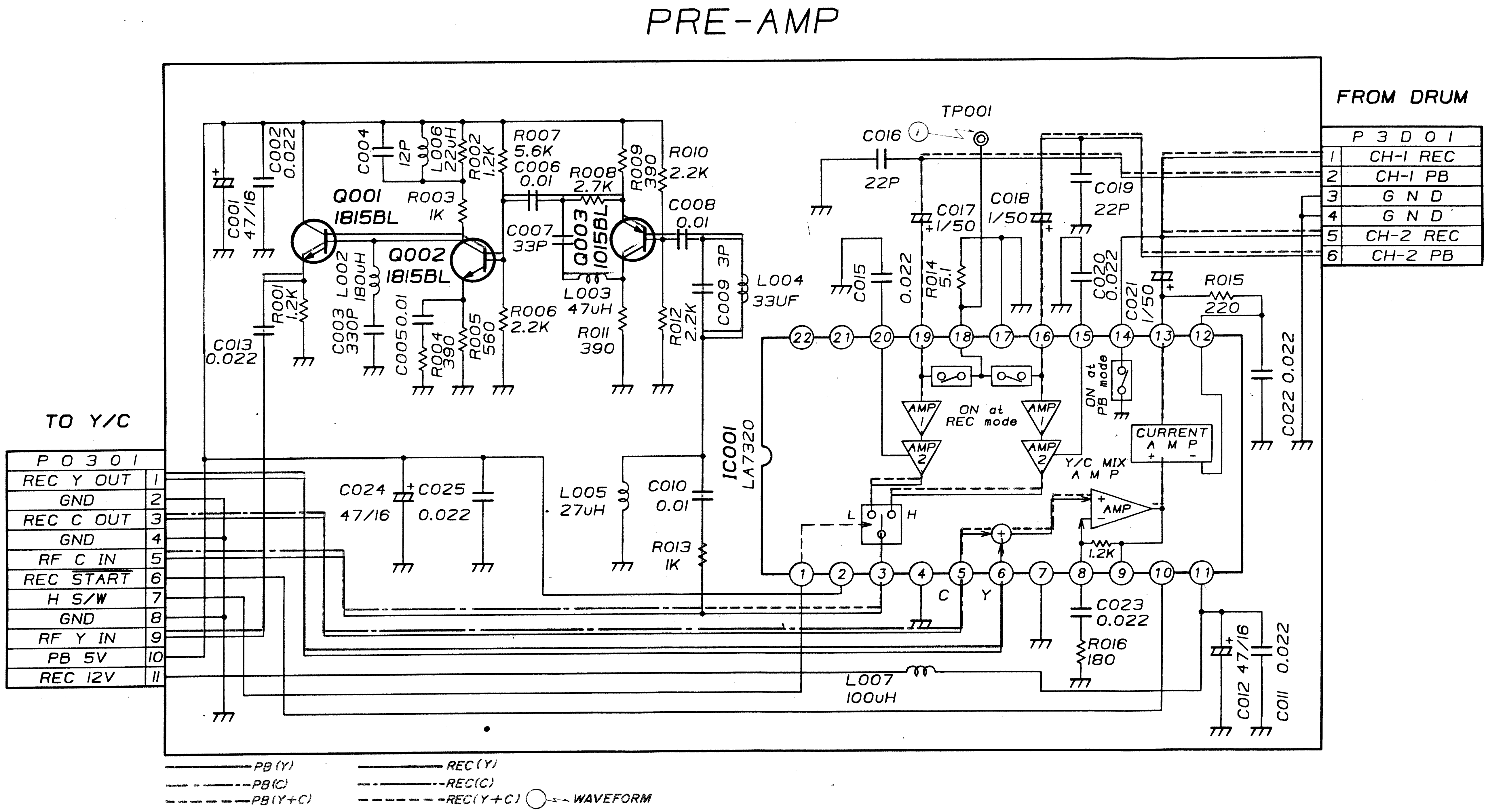
6. Timer Circuit Diagram



491–697	D613	SW610	D607 SW616	SYSTEM
A	O	O	X	P,W
B	X	X	X	I
C	O	O	O	D,H

SP LP EP
VCR
REC
SUN MON TUE WED THU FRI SAT CATV CH
QTR
M
START
AM
STOP
PM
DEW
LINE
a b c d e LOK ST0 LOK ST1 LOK ST2 LOK ST3 11G 10G 9G 8G 7G 6G 5G 4G PWR FAIL −30V 3G 2G 1G NC KEY RTN0 KEY RTN1 KEY RTN2 KEY RTN3 REMOCON H SYNC SYNC DET REEL P VCC
h g f i AFT + AFT − I/O EAR CLK AFT DEF AUDIO DEF TEST CL2 CL1 GND OSC1 OSC2 RESET LOK RTN0 LOK RTN1 LOK RTN2 NC BAND B BAND A C1 C2 C3 NC PWM SO SI SCK
PRE/NOR SW609
CLEAR SW623
ENTER SW622
QSR SW617
SKIP SW613
CH MEMO SW612
BAND SW610
SEARCH SW611
CH DOWN SW624
CH UP SW625
MFT− SW614
MFT+ SW615
PAUSE SW608
STOP SW603
SW602 EJECT
POWER SW601
REC SW607
PLAY SW505
SW604 REW
FF SW606
TV/VCR SW616
(−) SW620
(+) SW621
PROG SW618
CLOCK SW619
5G 4G 3G 2G 9G 8G 7G 6G
RTN 3 RTN 2 RTN 1 RTN 0
D604 D606 D605 D609 D601 D602 D607 D603
R614 68K R613 68K R612 68K R611 68K
TV/VCR UHF
(D614) D612 D613
(R604) 68K R608 68K
32.768KHZ
C601 15P X602 C602 27P
47/16V C603
R601 1M X601 4MHZ
R610 10K
VR601 10KB
R616 33K
SW630 EDIT OFF ON
D608
LD601
R617 560
C606 0.47/50
R608 10K R607 10K
R609 10K
REMOCON RECEIVER VCC OUT R/C601
P6702 H SYNC SYNC DET SHARPNESS BAND B BAND A AFT DEF PWM AUDIO DEF AFC − AFC +
1 2 3 4 5 6 7 8 9 10
P6501 RESET SCK SO SI 5VA REEL P GND −30 AC 1.7V AC 1.7V 5V
11 10 9 8 7 6 5 4 3 2 1
5 4 3 2 1
A B C D E F G H

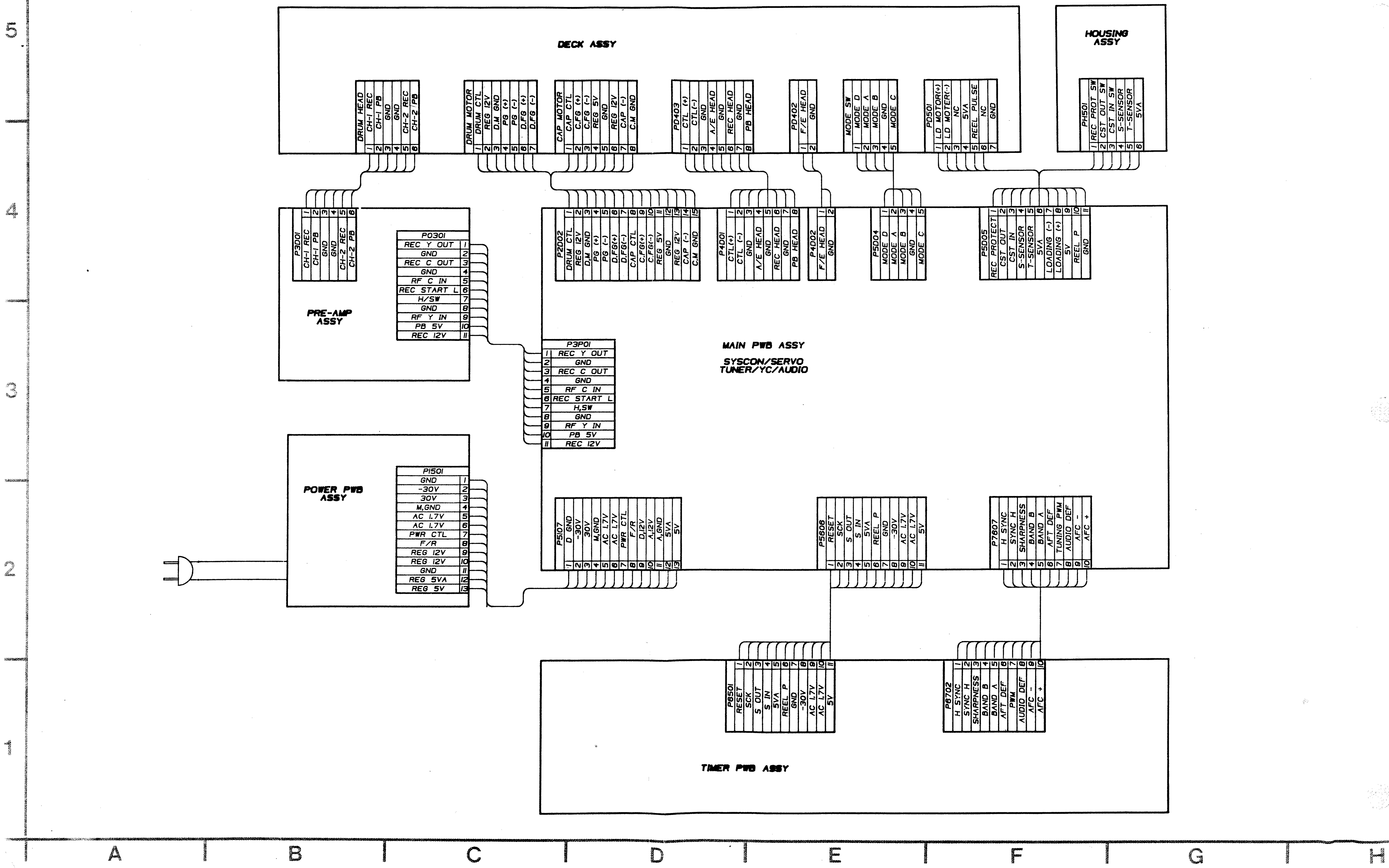
7. Pre-Amp Circuit Diagram


PRE-AMP
FROM DRUM
P 3 D 0 1
1 CH-1 REC
2 CH-1 PB
3 G N D
4 G N D
5 CH-2 REC
6 CH-2 PB
TO Y/C
P 0 3 0 1
REC Y OUT 1
GND 2
REC C OUT 3
GND 4
RF C IN 5
REC START 6
H S/W 7
GND 8
RF Y IN 9
PB 5V 10
REC 12V 11
C001 47/16
C002 0.022
C004 12P
L006 22uH
R002 1.2K
R007 5.6K
C006 0.01
R008 2.7K
R009 390
R010 2.2K
C008 0.01
Q001 1815BL
R003 1K
Q002 1815BL
C007 33P
Q003 1015BL
L003 47uH
C009 3P
L004 33UF
C013 0.022
R001 1.2K
C003 330P
L002 180uH
C005 0.01
R004 390
R005 560
R006 2.2K
R011 390
R012 2.2K
C024 47/16
C025 0.022
L005 27uH
C010 0.01
R013 1K
IC001 LA7320
TP001
C016 22P
C017 1/50
C018 1/50
C019 22P
C015 0.022
R014 5.1
C020 0.022
C021 1/50
R015 220
C022 0.022
ON at PB mode
ON at REC mode
AMP 1
AMP 2
CURRENT AMP
Y/C MIX AMP
AMP
L
H
C
Y
1.2K
C023 0.022
R016 180
L007 100uH
C012 47/16
C011 0.022
22 21 20 19 18 17 16 15 14 13 12
1 2 3 4 5 6 7 8 9 10 11
PB(Y)
PB(C)
PB(Y+C)
REC(Y)
REC(C)
REC(Y+C)
WAVEFORM

5 4 3 2 1

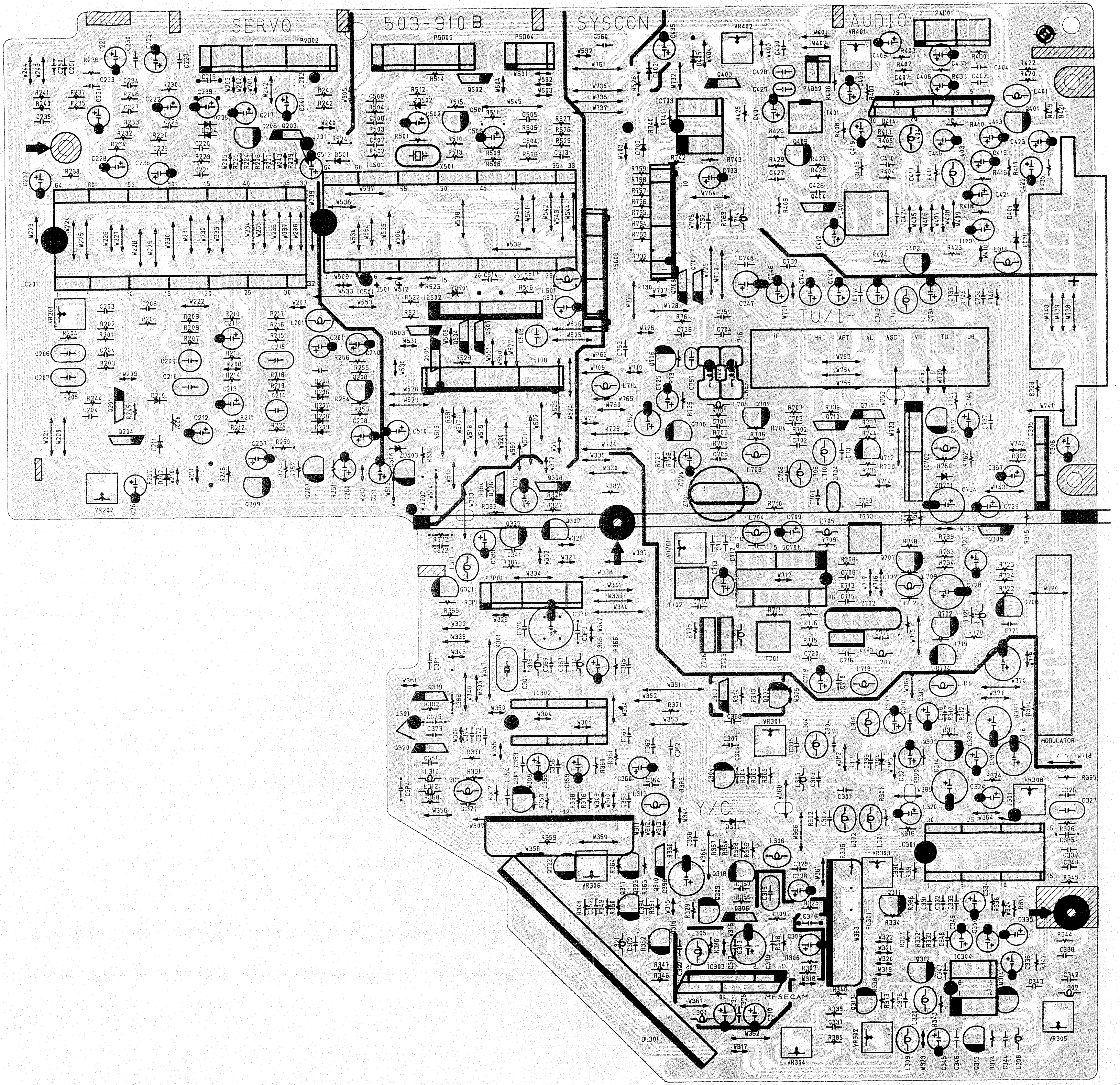
A B C D E F G H

8. Connection Circuit Diagram


DECK ASSY
DRUM HEAD
1 CH-1 REC
2 CH-1 PB
3 GND
4 GND
5 CH-2 REC
6 CH-2 PB
DRUM MOTOR
1 DRUM CTL
2 REG 12V
3 D.M GND
4 PG (+)
5 PG (-)
6 D.FG (+)
7 D.FG (-)
CAP MOTOR
1 CAP CTL
2 C.FG (+)
3 C.FG (-)
4 REG 5V
5 GND
6 REG 12V
7 CAP (-)
8 C.M GND
PD403
1 CTL (+)
2 CTL(-)
3 GND
4 A/E HEAD
5 GND
6 REC HEAD
7 GND
8 PB HEAD
PD402
1 F/E HEAD
2 GND
MODE SW
1 MODE D
2 MODE A
3 MODE B
4 GND
5 MODE C
PD501
1 LD MOTOR(+)
2 LD MOTER(-)
3 NC
4 5VA
5 REEL PULSE
6 NC
7 GND
HOUSING ASSY
PH501
1 REC PROT SW
2 CST OUT SW
3 CST IN SW
4 S-SENSOR
5 T-SENSOR
6 5VA
PRE-AMP ASSY
P3D01
1 CH-1 REC
2 CH-1 PB
3 GND
4 GND
5 CH-2 REC
6 CH-2 PB
P0301
REC Y OUT 1
GND 2
REC C OUT 3
GND 4
RF C IN 5
REC START L 6
H/SW 7
GND 8
RF Y IN 9
PB 5V 10
REC 12V 11
MAIN PWB ASSY
SYSCON/SERVO
TUNER/YC/AUDIO
P2D02
1 DRUM CTL
2 REG 12V
3 D.M GND
4 PG (+)
5 PG (-)
6 D.FG(+)
7 D.FG(-)
8 CAP CTL
9 C.FG(+)
10 C.FG(-)
11 REG 5V
12 GND
13 REG 12V
14 CAP (-)
15 C.M GND
P4D01
1 CTL(+)
2 CTL (-)
3 GND
4 A/E HEAD
5 GND
6 REC HEAD
7 GND
8 PB HEAD
P4D02
1 F/E HEAD
2 GND
P5D04
1 MODE D
2 MODE A
3 MODE B
4 GND
5 MODE C
P5D05
1 REC PROTECT
2 CST OUT
3 CST IN
4 S-SENSOR
5 T-SENSOR
6 5VA
7 LOADING (-)
8 LOADING (+)
9 5V
10 REEL P
11 GND
P3P01
1 REC Y OUT
2 GND
3 REC C OUT
4 GND
5 RF C IN
6 REC START L
7 H,SW
8 GND
9 RF Y IN
10 PB 5V
11 REC 12V
POWER PWB ASSY
P1501
GND 1
-30V 2
30V 3
M,GND 4
AC 1.7V 5
AC 1.7V 6
PWR CTL 7
F/R 8
REG 12V 9
REG 12V 10
GND 11
REG 5VA 12
REG 5V 13
P5107
1 D GND
2 -30V
3 30V
4 M,GND
5 AC 1.7V
6 AC 1.7V
7 PWR CTL
8 F/R
9 D,12V
10 A,12V
11 A,GND
12 5VA
13 5V
P5606
1 RESET
2 SCK
3 S OUT
4 S IN
5 5VA
6 REEL P
7 GND
8 -30V
9 AC 1.7V
10 AC 1.7V
11 5V
P7607
1 H SYNC
2 SYNC H
3 SHARPNESS
4 BAND B
5 BAND A
6 AFT DEF
7 TUNING PWM
8 AUDIO DEF
9 AFC -
10 AFC +
TIMER PWB ASSY
P8501
1 RESET
2 SCK
3 S OUT
4 S IN
5 5VA
6 REEL P
7 GND
8 -30V
9 AC 1.7V
10 AC 1.7V
11 5V
P8702
1 H SYNC
2 SYNC H
3 SHARPNESS
4 BAND B
5 BAND A
6 AFT DEF
7 PWM
8 AUDIO DEF
9 AFC -
10 AFC +
5
4
3
2
1
A
B
C
D
E
F
G
H

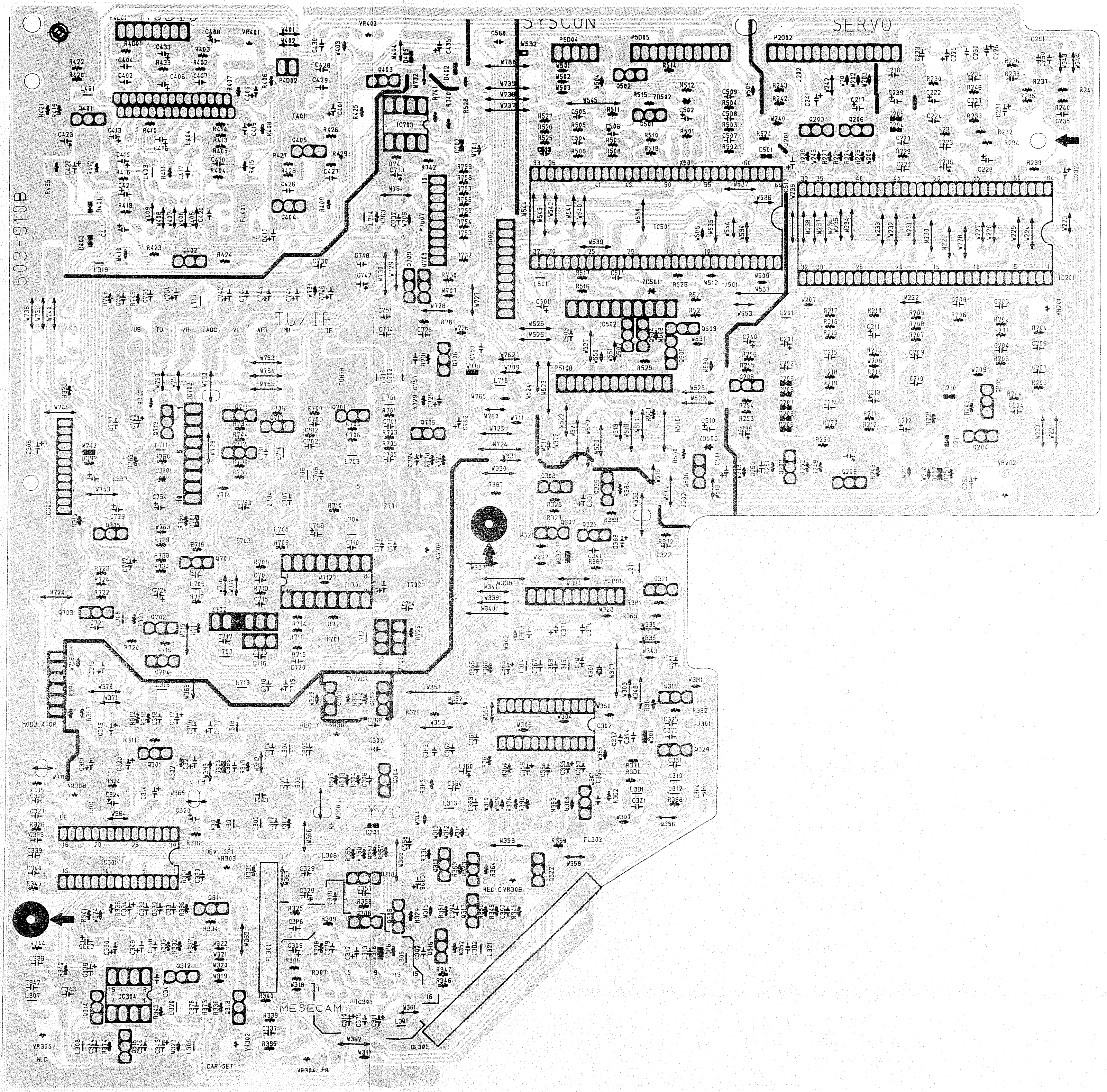
PRINTED CIRCUIT BOARD DAIGRAMS

1. Main P.C.Board (Model Type SCART Jack)


SERVO
503-910B
SYSCON
AUDIO
TU/IF
Y/C
MESECAM
MODULATOR

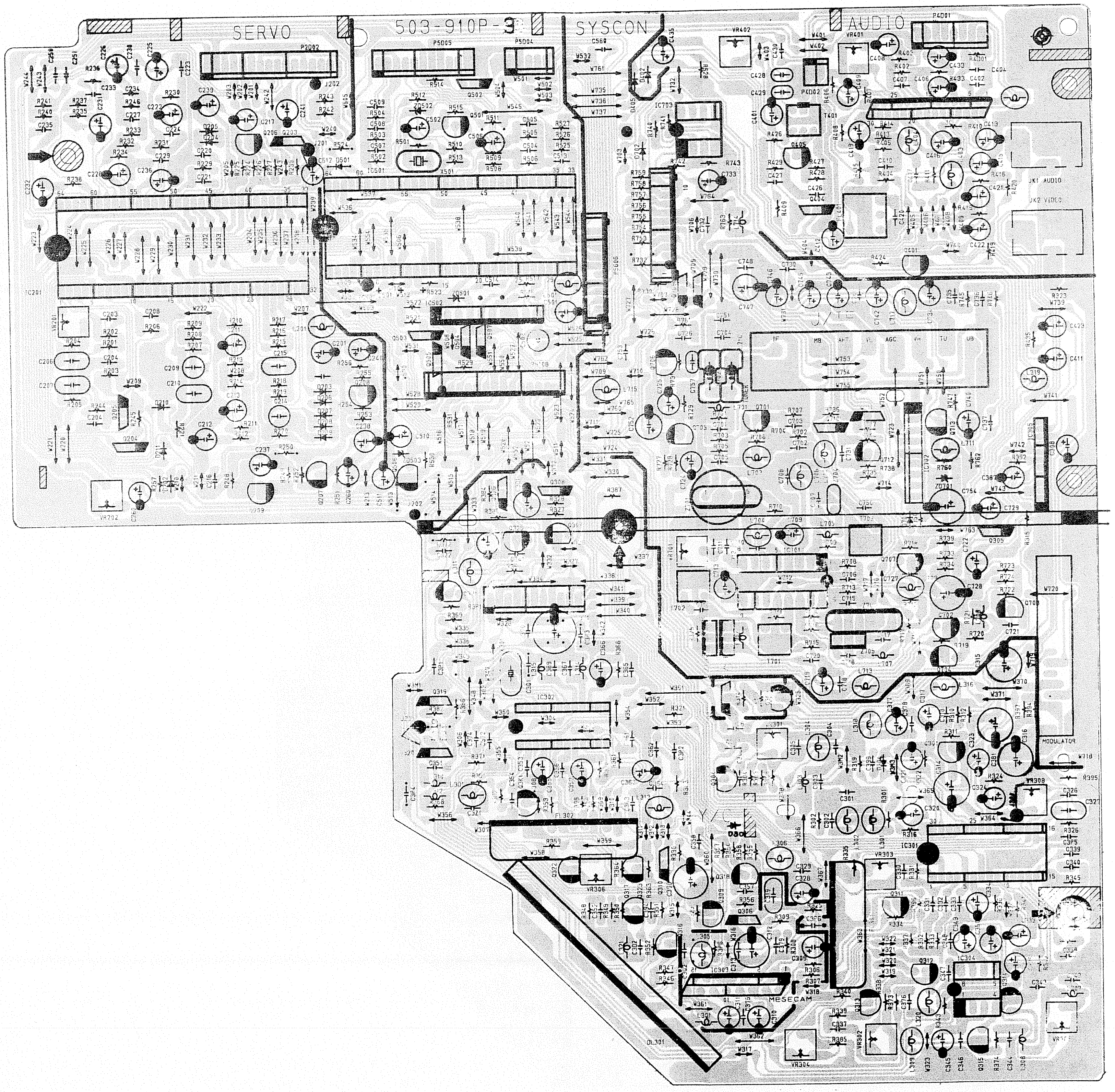
(Component Side)

5
4
3
2
1
A
B
C
D
E
F
G

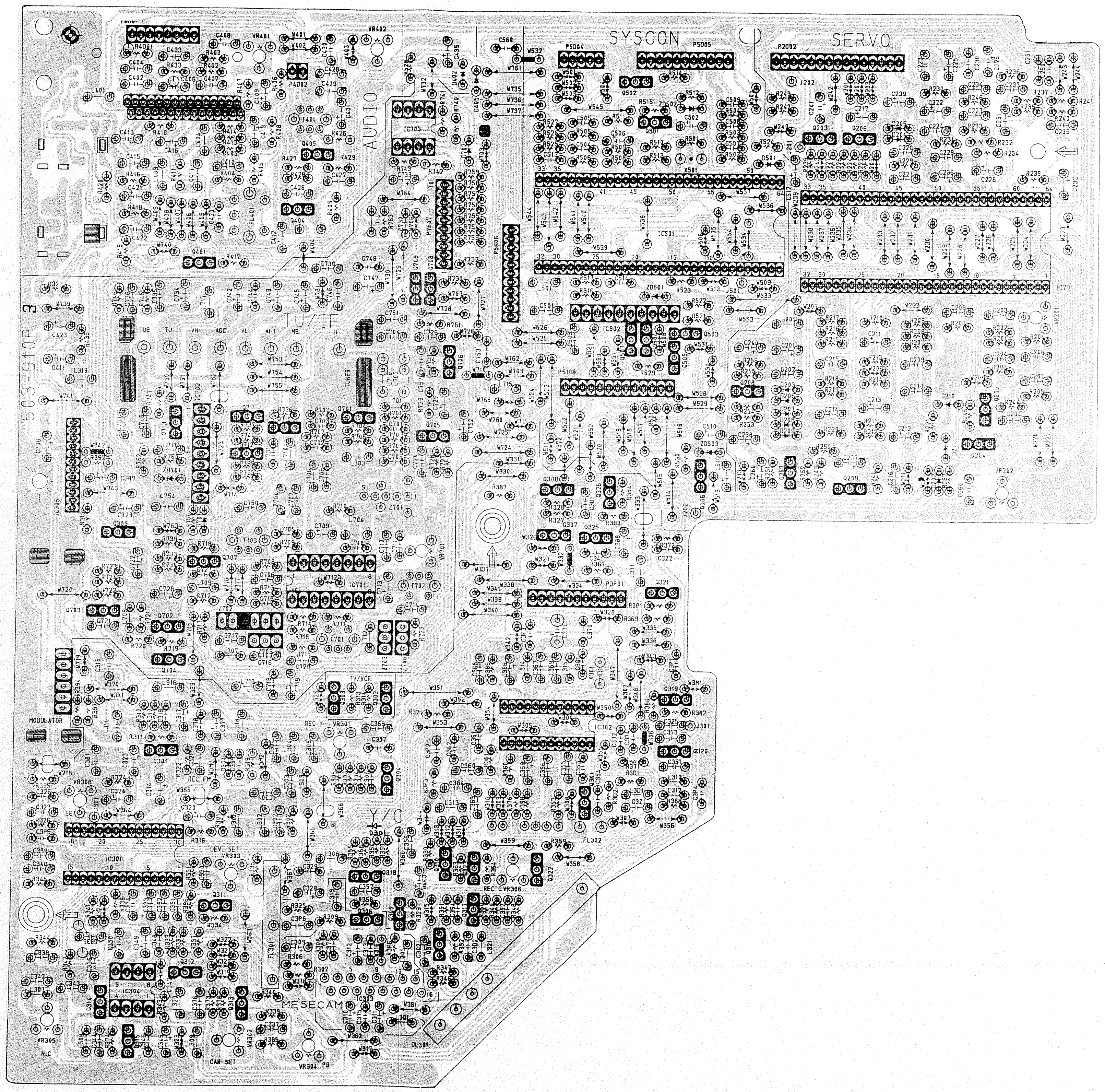

AUDIO
SYSCON
SERVO
503-910B
TU/IF
MODULATOR
Y/C
MESECAM
5
4
3
2
1
A
B
C
D
E
F
G
H

(Solder Side)

Main P.C.Board(Model Type RCA Jack)


SERVO
503-910P-3
SYSCON
AUDIO
JK1 AUDIO
JK2 VIDEO
MODULATOR
MESECAM
5
4
3
2
1
A
B
C
D
E
F
G

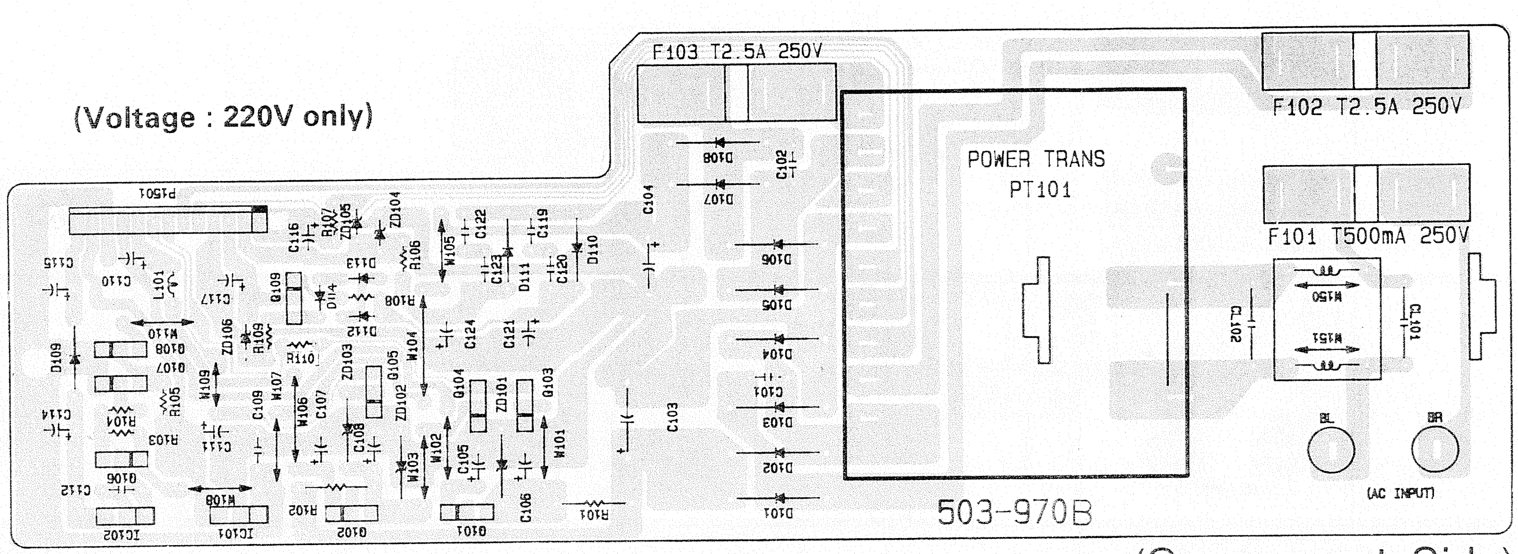
(Component Side)


SYSCON
SERVO
AUDIO
TU/IF
Y/C
MESECAM
MODULATOR
503-910P-3
IC501
IC201
IC301
IC701
A
B
C
D
E
F
G
H
1
2
3
4
5

(Solder Side)

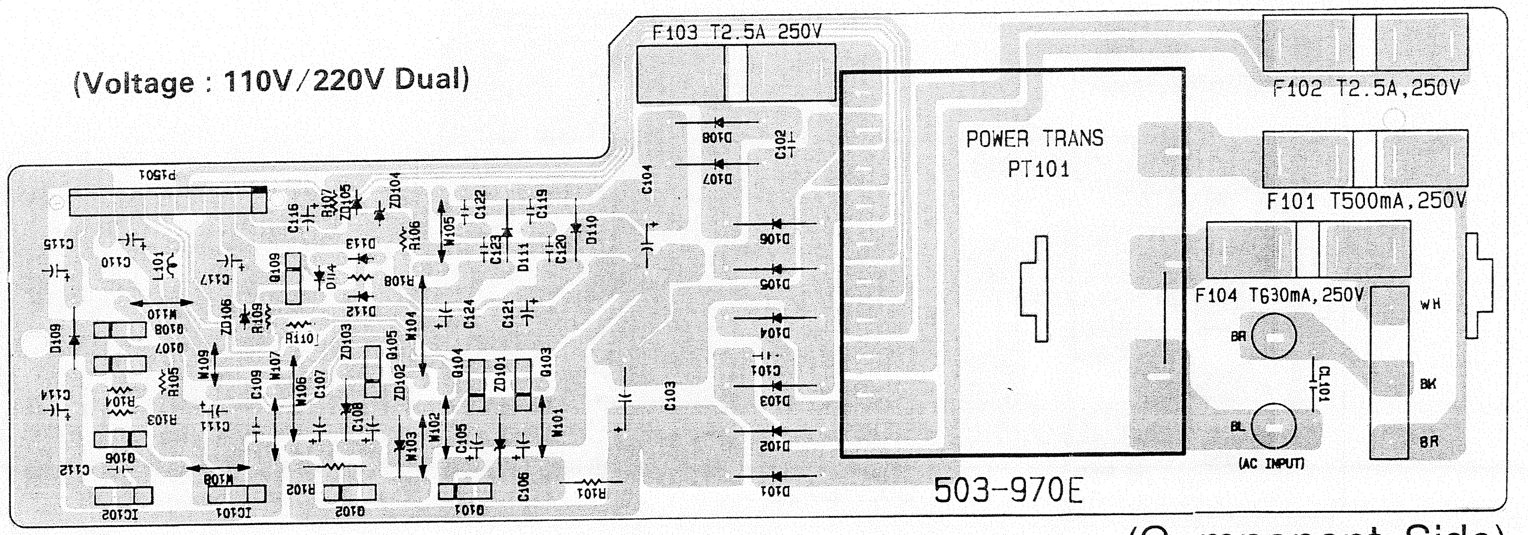
2. Power P.C.Board

(Voltage : 220V only)


F103 T2.5A 250V
F102 T2.5A 250V
F101 T500mA 250V
POWER TRANS
PT101
P1501
CL101
CL102
BL
BR
(AC INPUT)
503-970B

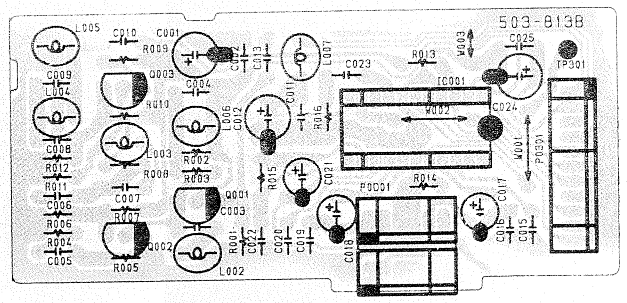
(Component Side)

(Voltage : 110V/220V Dual)


F103 T2.5A 250V
F102 T2.5A,250V
F101 T500mA,250V
F104 T630mA,250V
POWER TRANS
PT101
P1501
CL101
WH
BR
BK
BL
BR
(AC INPUT)
503-970E

(Component Side)

3. Pre-Amp P.C.Board



(Component Side)

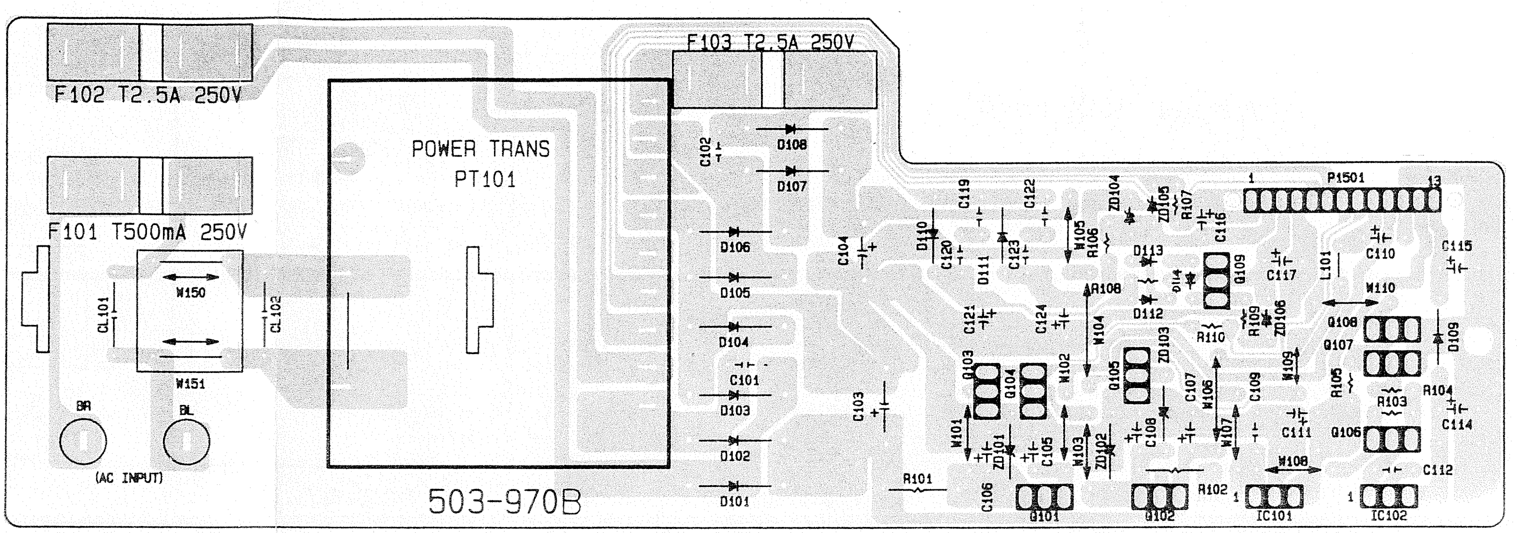
5

4

3

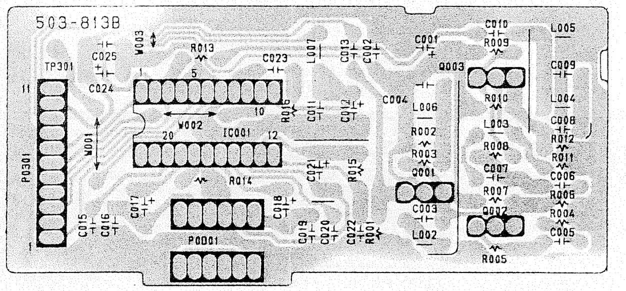
2

1



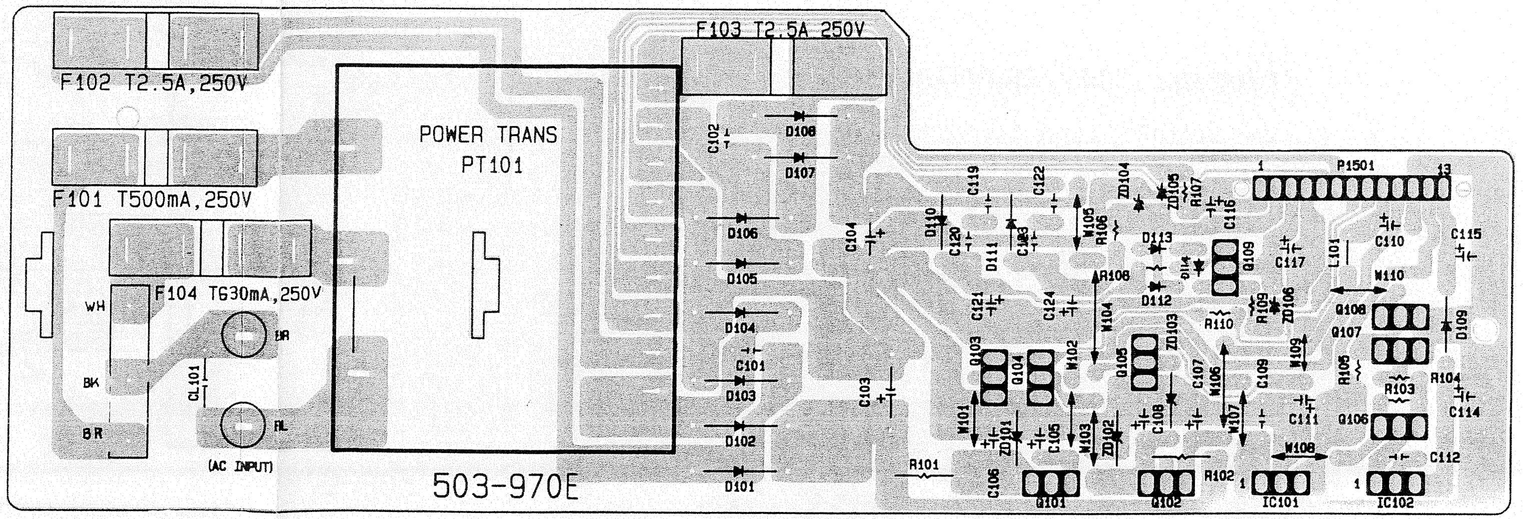
F102 T2.5A 250V
F101 T500mA 250V
F103 T2.5A 250V
POWER TRANS
PT101
503-970B
BR
BL
(AC INPUT)
W150
W151
CL101
CL102
P1501
IC101
IC102
Q101
Q102

(Solder Side)



503-813B
TP301
IC001
P0001
P0301

(Solder Side)



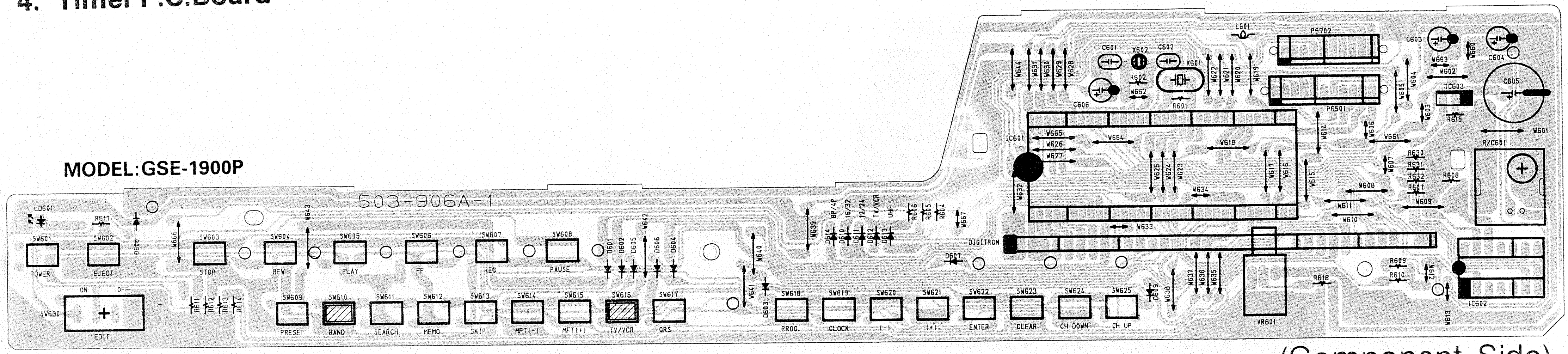
F102 T2.5A,250V
F101 T500mA,250V
F104 TG30mA,250V
F103 T2.5A 250V
POWER TRANS
PT101
503-970E
WH
BK
BR
BL
(AC INPUT)
CL101
P1501
IC101
IC102
Q101
Q102

(Solder Side)

A B C D E F G H

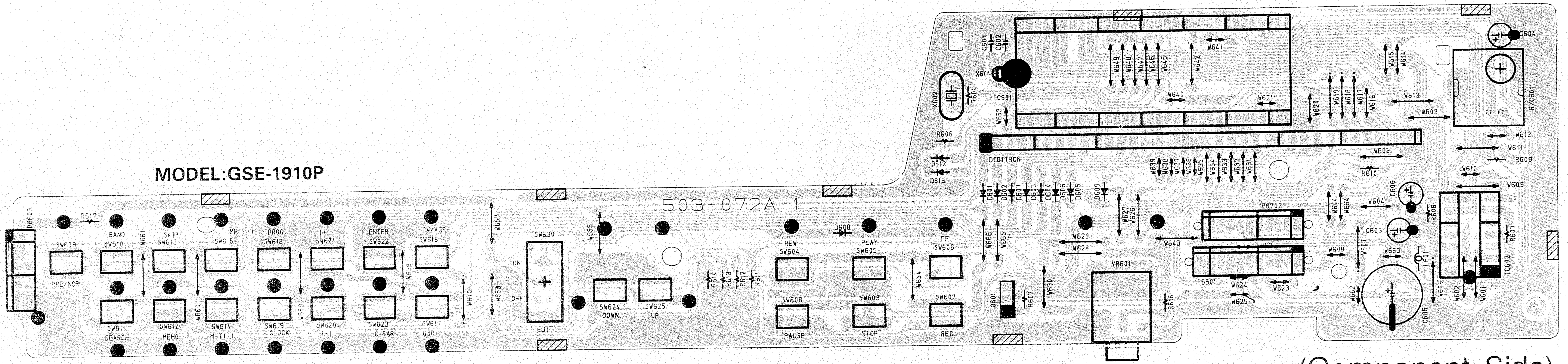
4. Timer P.C.Board

MODEL:GSE-1900P


503-906A-1
POWER
EJECT
STOP
REW
PLAY
FF
REC
PAUSE
EDIT
PRESET
BAND
SEARCH
MEMO
SKIP
TV/VCR
PROG.
CLOCK
ENTER
CLEAR
CH DOWN
CH UP
DIGITRON
IC601
IC602
VR601
P6501
P6702

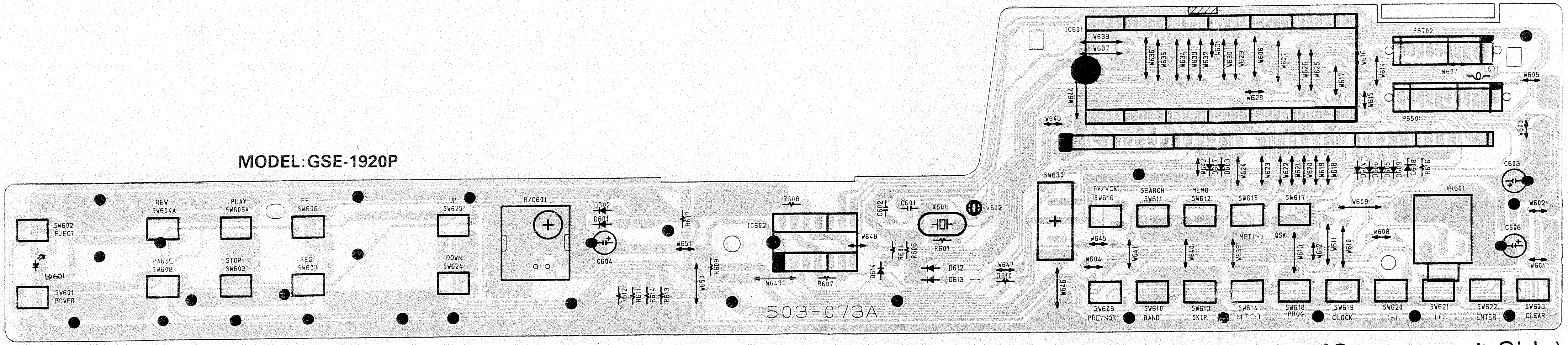
(Component Side)

MODEL:GSE-1910P

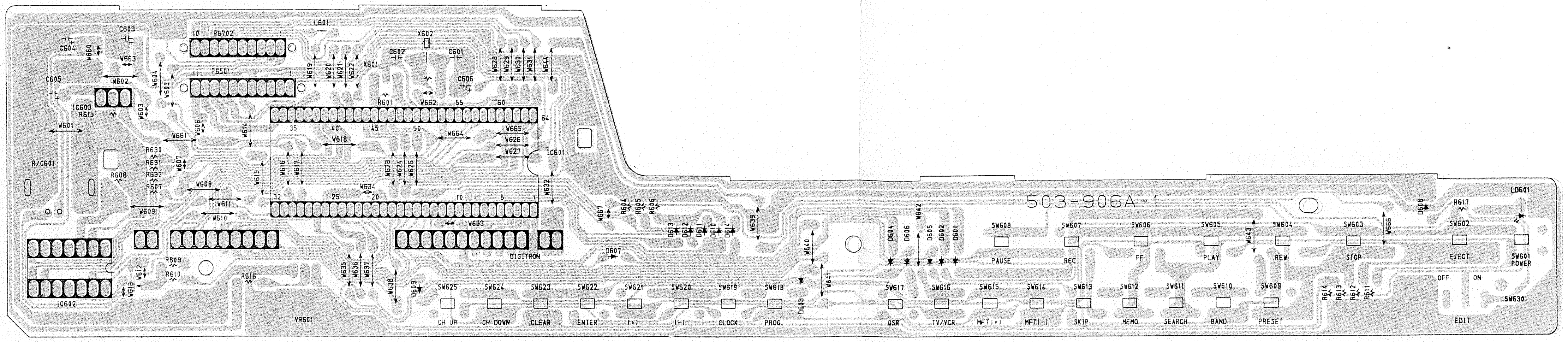

503-072A-1
PRE/NOR
BAND
SKIP
PROG.
ENTER
TV/VCR
SEARCH
MEMO
CLOCK
CLEAR
EDIT
DOWN
UP
REW
PLAY
FF
PAUSE
STOP
REC
DIGITRON
IC601
IC602
VR601
P6501
P6702

(Component Side)

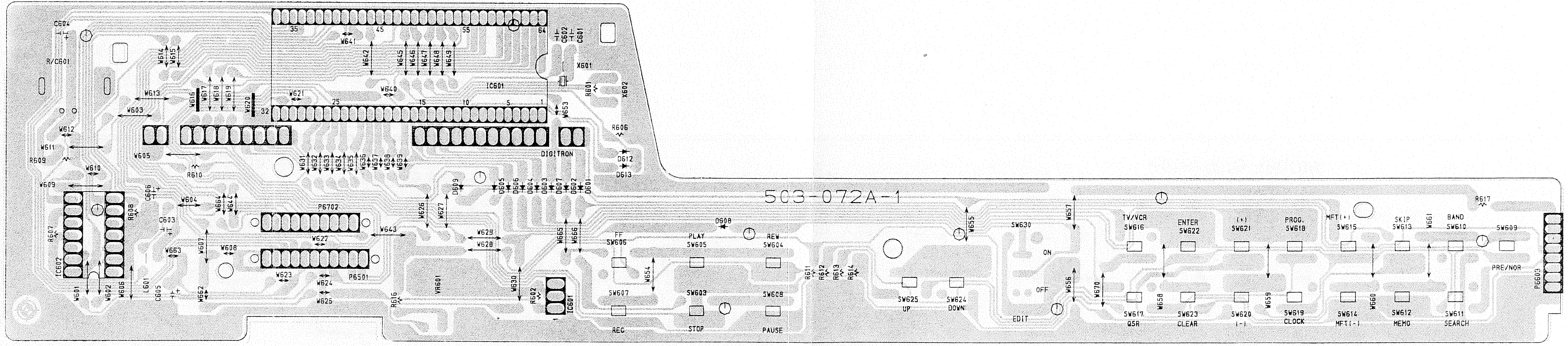
MODEL:GSE-1920P


503-073A
EJECT
POWER
REW
PLAY
FF
PAUSE
STOP
REC
UP
DOWN
R/C601
IC601
IC602
TV/VCR
SEARCH
MEMO
PRE/NOR
BAND
SKIP
PROG
CLOCK
ENTER
CLEAR
VR601
P6501
P6702

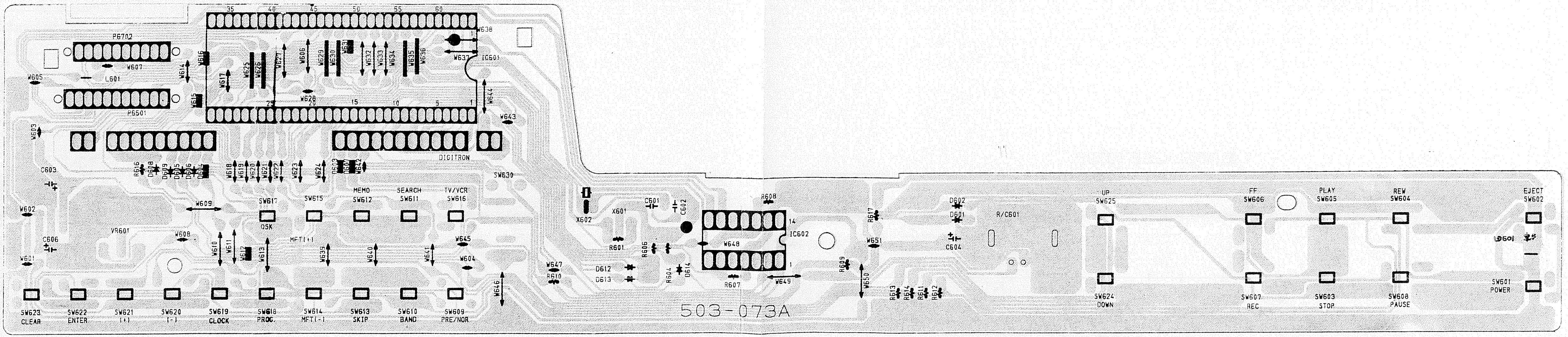
(Component Side)


503-906A-1
DIGITRON
IC601
IC602
IC603
P6702
P6501
X602
VR601
LD601
SW608 PAUSE
SW607 REC
SW606 FF
SW605 PLAY
SW604 REW
SW603 STOP
SW602 EJECT
SW601 POWER
SW625 CH UP
SW624 CH DOWN
SW623 CLEAR
SW622 ENTER
SW621 (+)
SW620 (-)
SW619 CLOCK
SW618 PROG.
SW617 QSR
SW616 TV/VCR
SW615 MFT(+)
SW614 MFT(-)
SW613 SKIP
SW612 MEMO
SW611 SEARCH
SW610 BAND
SW609 PRESET
SW630 EDIT
OFF
ON

(Solder Side)


503-072A-1
DIGITRON
IC601
IC602
P6702
P6501
P6603
X601
X602
VR601
SW630
ON
OFF
EDIT
SW606 FF
SW605 PLAY
SW604 REW
SW607 REC
SW603 STOP
SW608 PAUSE
SW625 UP
SW624 DOWN
SW616 TV/VCR
SW622 ENTER
SW621 (+)
SW618 PROG.
SW615 MFT(+)
SW613 SKIP
SW610 BAND
SW609 PRE/NOR
SW617 QSR
SW623 CLEAR
SW620 (-)
SW619 CLOCK
SW614 MFT(-)
SW612 MEMO
SW611 SEARCH

(Solder Side)


503-073A
DIGITRON
IC601
IC602
P6702
P6501
L601
X601
X602
VR601
R/C601
LD601
SW630
SW617 QSR
SW615 MFT(+)
SW612 MEMO
SW611 SEARCH
SW616 TV/VCR
SW625 UP
SW624 DOWN
SW606 FF
SW607 REC
SW605 PLAY
SW603 STOP
SW604 REW
SW608 PAUSE
SW602 EJECT
SW601 POWER
SW623 CLEAR
SW622 ENTER
SW621 (+)
SW620 (-)
SW619 CLOCK
SW618 PROG.
SW614 MFT(-)
SW613 SKIP
SW610 BAND
SW609 PRE/NOR

(Solder Side)

5
4
3
2
1

A B C D E F G H

GS
GoldStar

P/N 493-120M

FEB. 1991. Printed in Korea

SECTION 4

MECHANISM

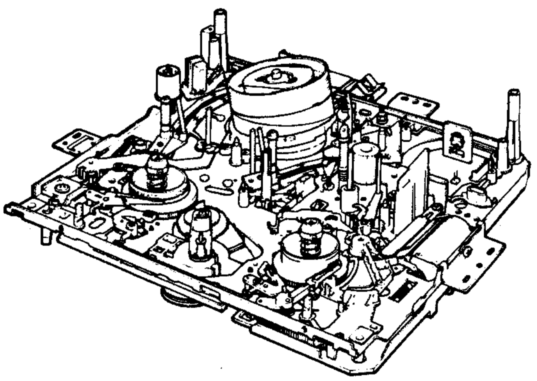
GoldStar

VHS SERVICE MANUAL

CONTENTS

FRONT LOADING MECHANISM DISASSEMBLY
DECK MECHANISM DISASSEMBLY
MECHANISM ADJUSTMENTS
MECHANISM TROUBLESHOOTING GUIDE
EXPLODED VIEWS
- MOVING MECHANISM SECTION(I)
- MOVING MECHANISM SECTION(II)
- FRONT LOADING MECHANISM SECTION

REPLACEMENT PARTS LIST



VIDEO MECHANISM GSE-D09

GoldStar

CONTENTS

FRONT LOADING MECHANISM DISASSEMBLY

- Front Loading Mechanism Parts Location.......... 4-3

1. Front Loading Mechanism.......... 4-4
2. Cassette Door.......... 4-4
3. PCB Assembly.......... 4-5
   1) Supply PCB Assembly.......... 4-5
   2) Take-up PCB Assembly.......... 4-5
4. Safety Switch.......... 4-5
5. Right Bracket Assembly.......... 4-5
6. Door Opener.......... 4-6
7. Left Arm Gear Assembly.......... 4-6
8. Cassette Guide.......... 4-6
9. Drive Gear Assembly.......... 4-6
10. Top Plate.......... 4-6
11. Ground Plate.......... 4-6
12. Cassette Holder Assembly.......... 4-7

DECK MECHANISM DISASSEMBLY

- Deck Mechanism Parts Location.... 4-9

1. FE Head.......... 4-10
2. A/C Head.......... 4-10
3. Drum Motor Assembly.......... 4-10
4. Capstan Motor Assembly.......... 4-11
5. Loading Bracket Assembly.......... 4-11
6. Reel PCB Assembly.......... 4-13
   - LED Sensor.......... 4-14
   - Reel Sensor.......... 4-14
   - DEW Sensor.......... 4-14
7. Impedance Roller.......... 4-14
8. Clutch Bracket Assembly.......... 4-15
9. Function Plate Assembly.......... 4-15
10. Slant Post Assembly (L),(R).......... 4-15
11. Loading Gear Assembly (L),(R).......... 4-16
12. Tension Arm Assembly.......... 4-16
13. Take Up Arm Assembly.......... 4-16
14. Pinch Arm Assembly.......... 4-17
15. Main Supply, Take-Up Brake Assembly.......... 4-17
16. Supply, Take-Up Soft Brake.......... 4-17
17. Supply, Take-Up Reel Assembly.... 4-18
18. Pause Stopper.......... 4-18

MECHANISM ADJUSTMENTS

- Jigs and Tools for Deck.......... 4-19

1. Mechanism State Switch (Mode switch) Check.......... 4-20
2. Preparation for Adjustment (To set VCR to the loading state without inserting a cassette).......... 4-21
3. Reel Table Height Adjustment.......... 4-21
4. Tension Post Position and Tension Adjustment.......... 4-22
5. Checking Torque.......... 4-23
6. Guide Post Height Adjustment...... 4-24
7. Guide Roller Height Adjustment.... 4-25
8. Audio/Control(A/C) Head Adjustment.......... 4-27
9. X-Value Adjustment.......... 4-28
10. Adjustment after Replacing Drum Assembly (Video Heads).......... 4-29
11. Maintenance/Inspection Procedure.......... 4-30

MECHANISM TROUBLESHOOTING GUIDE

1. Deck Parts.......... 4-33
2. Front Loading Mechanism Parts..... 4-38

EXPLODED VIEWS

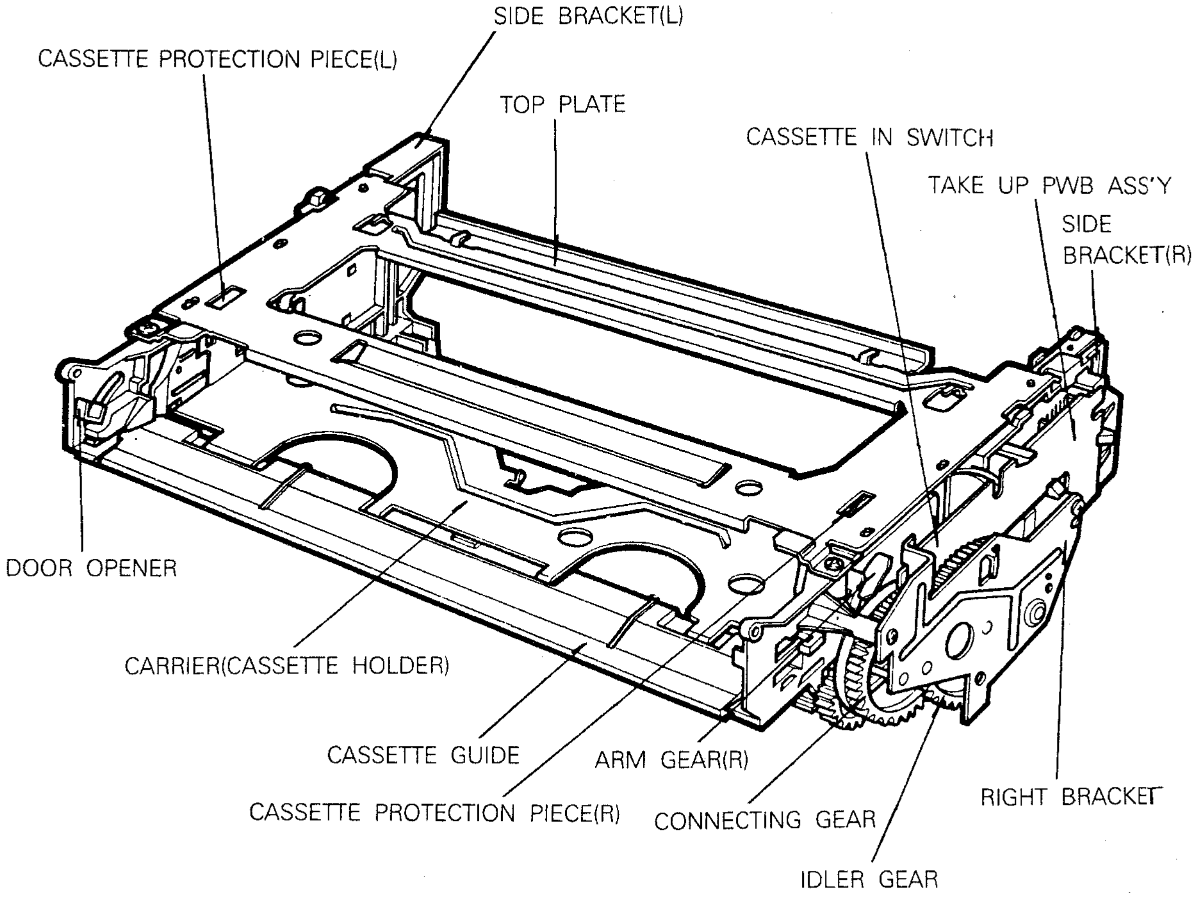
1. Moving Mechanism Section(I)........ 4-41
2. Moving Mechanism Section(II)....... 4-43
3. Front Loading Mechanism Section 4-45

REPLACEMENT PARTS LIST 4-47

1. Mechanical Section.......... 4-47
2. Difference Table of Mechanism Parts.......... 4-51

FRONT LOADING MECHANISM DISASSEMBLY

- **Front Loading Mechanism Parts Location**


SIDE BRACKET(L)
CASSETTE PROTECTION PIECE(L)
TOP PLATE
CASSETTE IN SWITCH
TAKE UP PWB ASS'Y
SIDE BRACKET(R)
DOOR OPENER
CARRIER(CASSETTE HOLDER)
CASSETTE GUIDE
ARM GEAR(R)
CASSETTE PROTECTION PIECE(R)
CONNECTING GEAR
RIGHT BRACKET
IDLER GEAR

1. **Front Loading**
   Components list below will be described as if the top and bottom covers and the front panel have already been removed.
2. **Cassette Door**
3. **PCB Assembly**
4. **Safety Switch**
5. **Right Bracket Assembly**
6. **Door Opener**
7. **Left Arm Gear Assembly**
8. **Cassette Guide**
9. **Drive Gear Assembly**
10. **Top Plate**
11. **Ground Plate**
12. **Cassette Holder Assembly**

1. Front Loading Mechanism(Fig. F-1)

1) Remove the top and bottom covers and the front panel.
2) Remove the connector.
3) Remove two screws(A).
4) Lift the Front Loading Mechanism up in the direction of the arrow.
   *Give special attention to removal, because the two parts are engaged(B). Note this position for reassembly.

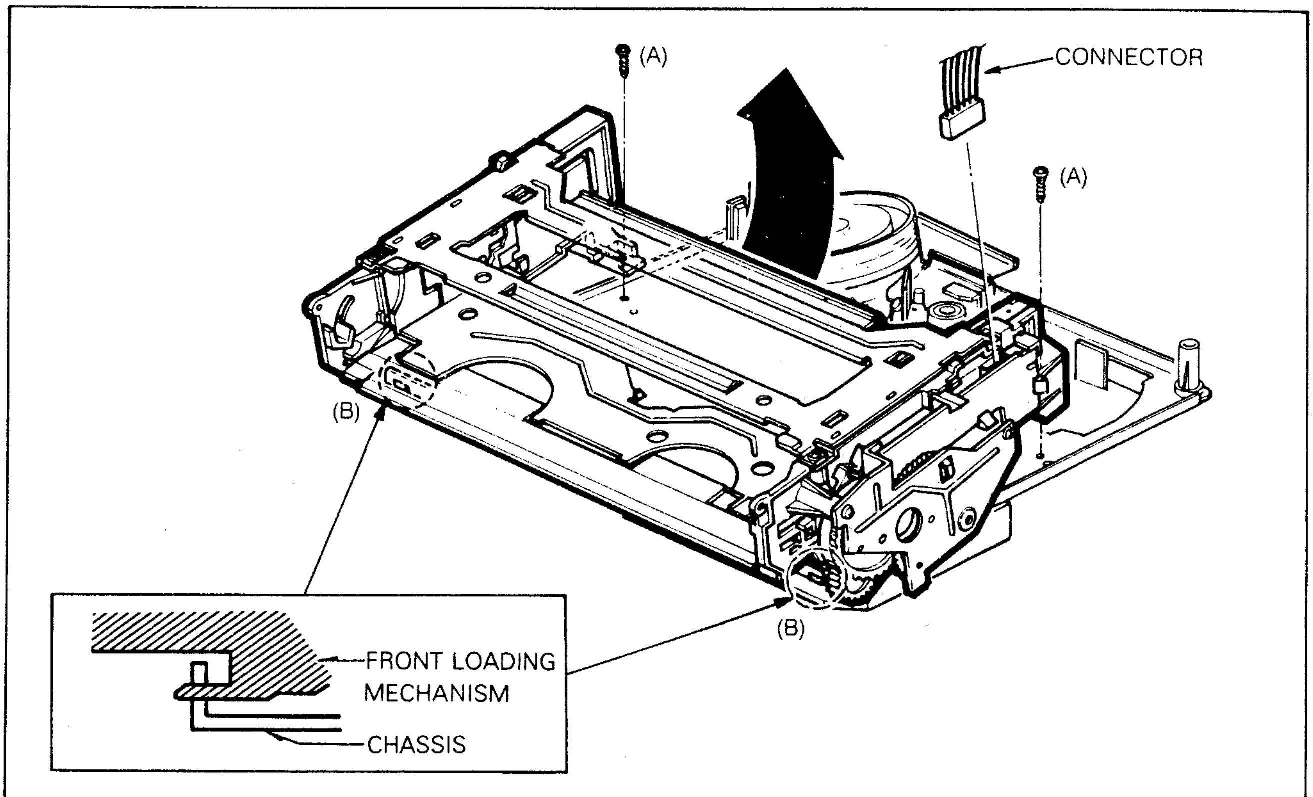

(A)
CONNECTOR
(A)
(B)
(B)
FRONT LOADING MECHANISM
CHASSIS

Fig. F-1 Front Loading Mechanism

2. Cassette Door(Fig. F-2)

1) Remove the spring from the Cassette Door.
2) Remove the Cassette Door by pushing the Side Bracket(L)/(R) left and right.

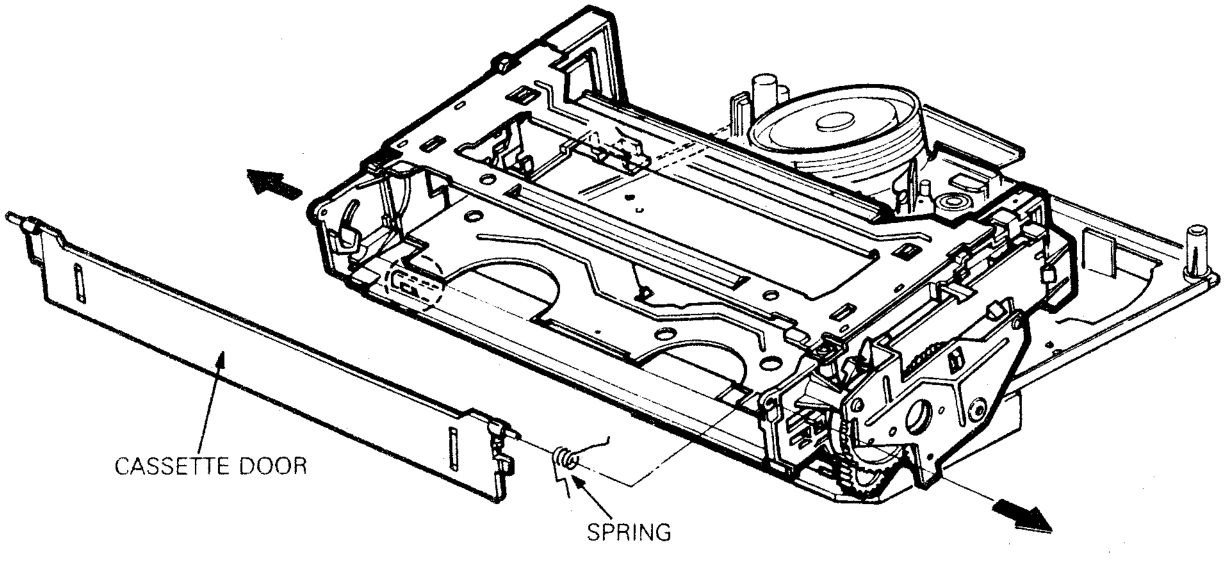

CASSETTE DOOR
SPRING

Fig. F-2 Cassette Door

3. PCB Assembly

1) Supply PCB Assembly(Fig. F-3-1)
   - Remove the Supply PCB Assembly by pushing three Hooks outward.
   - Release the Lead Wire from the Stoppers.

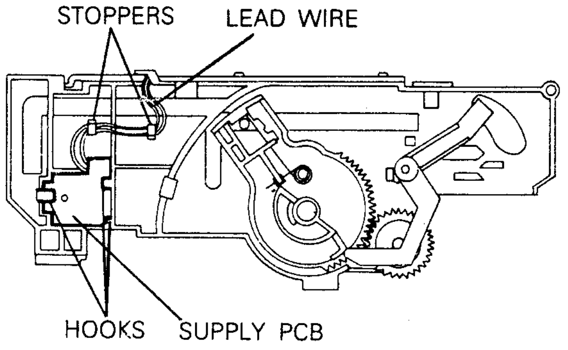

STOPPERS
LEAD WIRE
HOOKS
SUPPLY PCB

Fig. F-3-1 Supply PCB Assembly

2) Take-Up PCB Assembly(Fig. F-3-2)
   - Release the Take-Up PCB Assembly by pushing three Hooks outward.
   - Remove the Lead Wire from the Stopper.

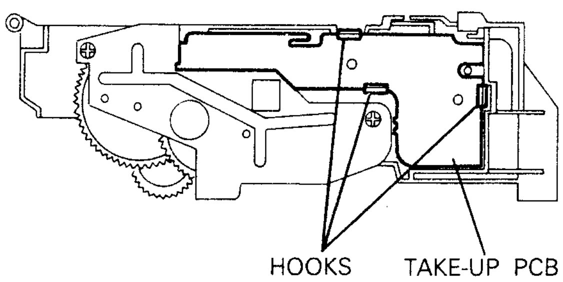

HOOKS
TAKE-UP PCB

Fig. F-3-2

4. Safety Switch(Fig. F-4)(Used in VCR Model)

1) Release a Hook by pushing in the direction of the arrow.
2) Release the Lead Wire from the Stopper.

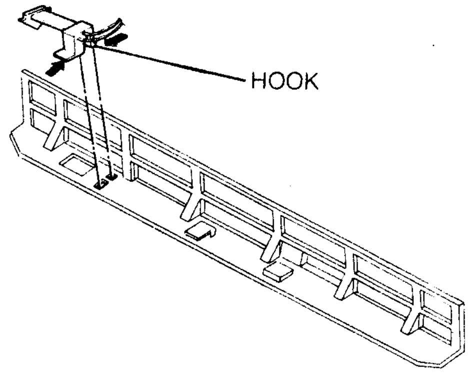


Fig. F-4

5. Right Bracket Assembly

1) Remove two screws(B).(Fig. F-5-1)

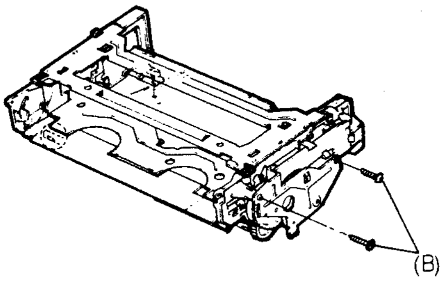


Fig. F-5-1 Right Bracket Assembly

2) Remove the Washer and the Worm Gear. (Fig. F-5-2)
3) Remove the Right Arm Gear Assembly by pushing the Hook(A) outward. (Fig. F-5-3)
4) Remove the Connecting Gear by pushing the Hook(B). (Fig. F-5-3)

(Notes in reassembling)

1) Assemble the Idler Gear to the Right Bracket so that the Right Bracket Hole(A) is in line with the Idler Gear Hole(A).
2) By fitting the two "△" marks of the Connecting Gear and the Idler Gear, connect them to the Shaft of the Right Bracket.
3) Assemble the Right Arm Gear so that the distance(B) of the Right Bracket Shaft, which is inserted to the Idler Gear, is 0~0.8mm.(Fig. F-5-3)
4) After assembling the Worm Gear to the Right Bracket, secure them.
5) Tighten the washer.

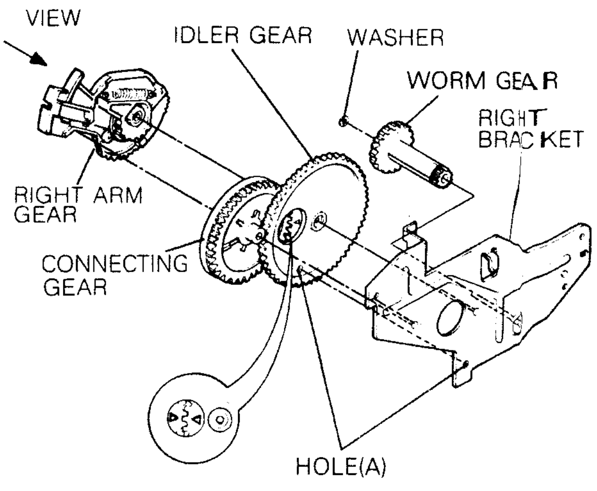

VIEW
IDLER GEAR
WASHER
WORM GEAR
RIGHT BRACKET
RIGHT ARM GEAR
CONNECTING GEAR
HOLE(A)

Fig. F-5-2 Right Bracket Assembly

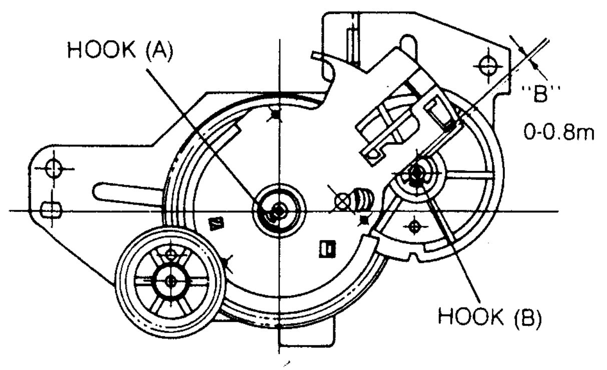


Fig. F-5-3 Right Bracket Assembly

6. Door Opener (Fig. F-6)

1) Remove the Door Opener by pushing the Hook(A) outward.

7. Left Arm Gear Assembly(Fig. F-6)

1) Remove the Left Arm Gear Assembly by pushing the Hook(B) outward.

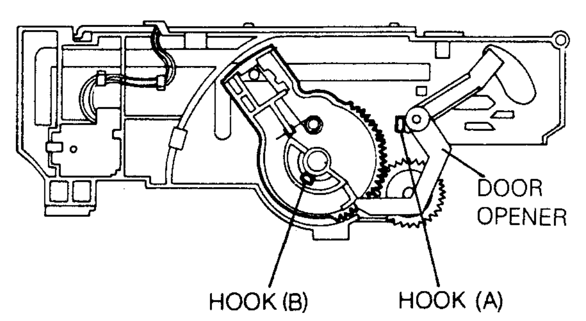


Fig. F-6

8. Cassette Guide(Fig. F-7)

1) Remove the Safety Switch.(See Fig. F-4)
(In Case of VCR Model)
2) Remove the Cassette Guide in the direction of the arrow by pressing both ends of it downward.

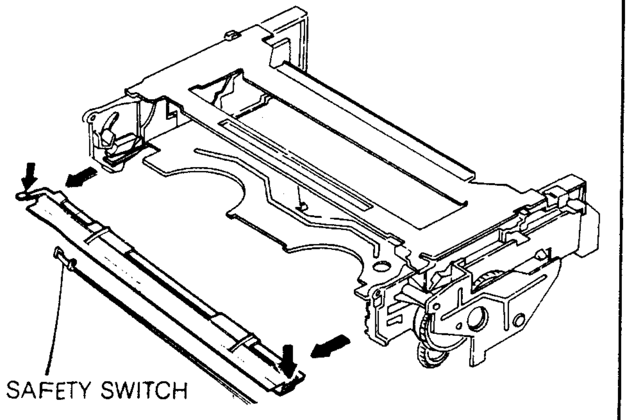


Fig. F-7 Cassette Guide

9. Drive Gear Assembly(Fig. F-8)

1) Remove the Drive Gear Assembly assembled at the Side Bracket Left/Right as shown in Fig. F-8.

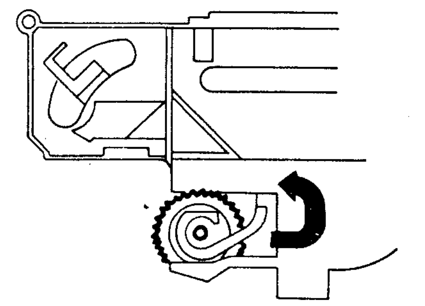


Fig. F-8 Drive Gear Assembly

10. Top Plate (Fig. F-9)

1) Remove the two screws(C).
2) Remove the Top Plate while giving attention to the assembled condition of the Side Bracket Left/Right.

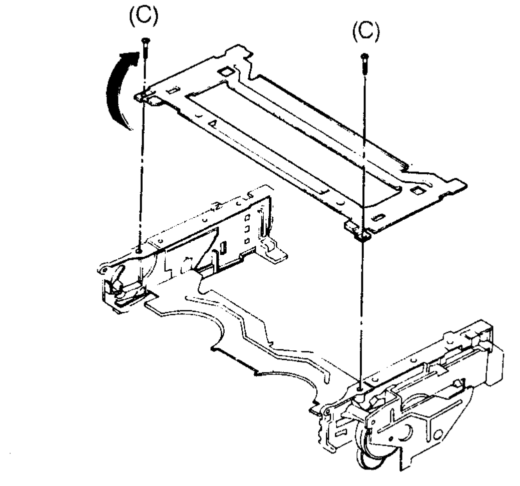


Fig. F-9 Top Plate

11. Ground Plate(Fig. F-10)

1) Pull the Stopper outward and remove the Ground Plate as shown in Fig. F-10.

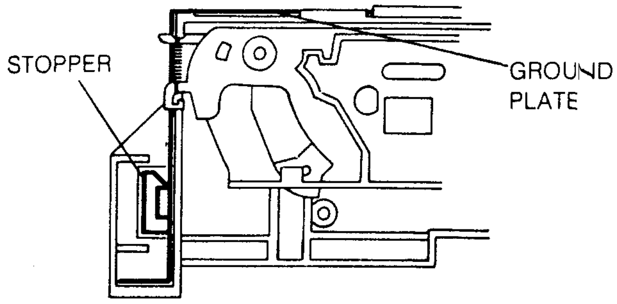


Fig. F-10

12. Cassette Holder Assembly

After removing the Side Bracket Left/Right, remove the Cassette Holder Assembly.

1. Left Holder Bracket Assembly
   1) Remove the Left Holder Bracket Assembly by pushing the Hooks(A), (B) outward.
   2) Remove the Spring(A).
   3) Remove the Cassette Protect Left Arm by pushing the Hook(C) outward.
2. Right Holder Bracket Assembly
   1) Remove the Right Holder Bracket Assembly by pushing the Hooks(D).(E) outward.
   2) Remove the Spring(B).
   3) Remove the Lid Opener by pushing the Hook(F) outward.
   4) Remove the Spring(C).
   5) Remove the Cassette Protect Right Arm by pushing the Hook (G) outward.

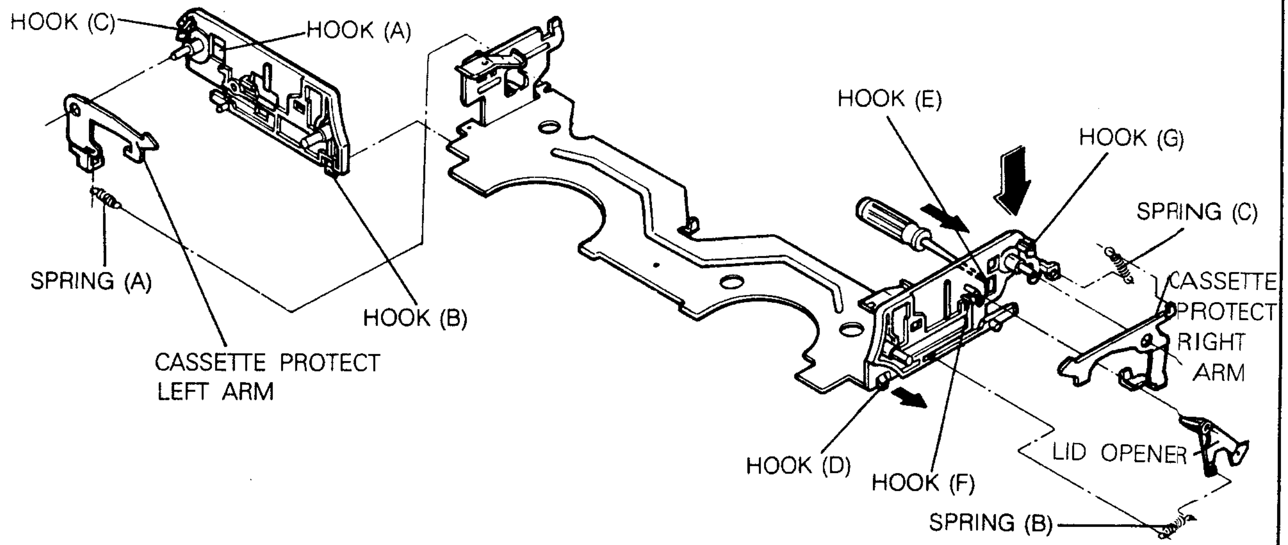

HOOK (C)
HOOK (A)
SPRING (A)
HOOK (B)
CASSETTE PROTECT LEFT ARM
HOOK (E)
HOOK (G)
SPRING (C)
CASSETTE PROTECT RIGHT ARM
LID OPENER
HOOK (D)
HOOK (F)
SPRING (B)

Fig. F-11 Cassette Holder Assembly

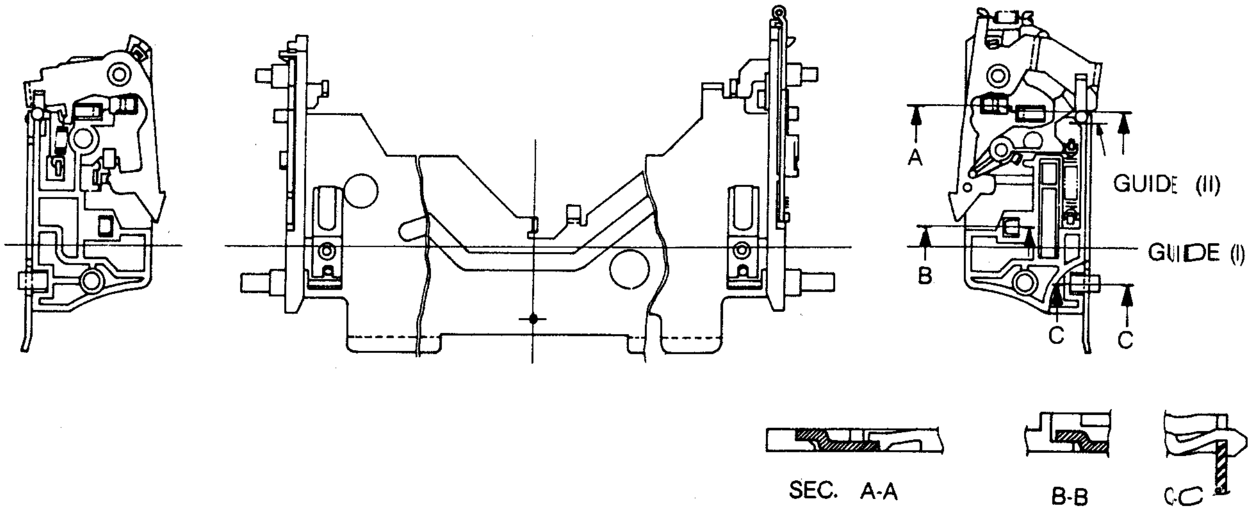

A
B
C
C
GUIDE (II)
GUIDE (I)
SEC. A-A
B-B
C-C

Fig. F-12 Cassette Holder Assembly

(Notes in reassembling)

1. Holder Bracket Assembly(Fig. F-12)

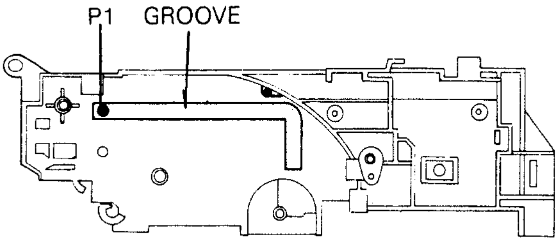
1) In reassembling the Right/Left Holder Bracket Assembly, assemble as SEC. A-A, B-B, C-C shown in Fig.F-12. Especially, assemble them to be connected to the Guide(I), Guide(II).
2) Make sure that each part operates normally after all assembling.

2. Assembling the Right/ Left Side Bracket and the Holder Bracket Assembly.(Fig. F-13)

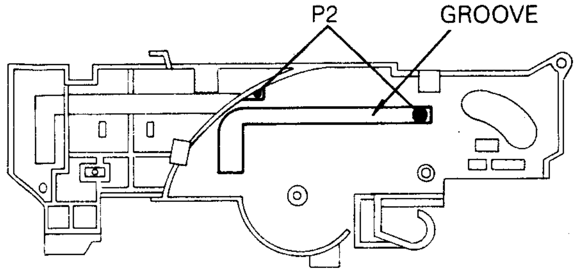
1) Assemble the Top Plate after assembling the Right/Left Side Bracket to the Holder Bracket Assembly. And then assemble the Guide Pins(P1, P2)of the Holder Bracket Assembly to the two grooves of the Right Side Bracket and the Left Side Bracket as shown in Fig.F-13.
2) Assemble the Top Plate completely with the screw.

3. When assembling the Front Loading Mechanism to the Deck Mechanism.

1) Set the Cam of Loading Bracket Assembly in Eject mode.
2) Adjust the Chassis to the Hole for the verticality of the assembled Cassette Loading Mechanism position. In case that the Hole position is not adjusted, adjust it by turning the Worm manually.



a) Right Side Bracket



b) Left Side Bracket

Fig. F-13 Right/Left Side Bracket

(Assembly method of front loading mechanism)

When finishing the assembly of the Loading Bracket Ass'y in the deck mechanism, the assembly method of the Front Loading Mechanism is as follows.

(1) If the operating circuit of the Loading Motor doesn't work.
   i) Turn Q Brake Lever(k) in the A-4 direction from outside and lock it at Q Brake Stopper(d-1) but it is not seen.(Refer to Fig. D-5-5)
   ii) Rotate the Pulley Motor counterclockwise with a(-) driver until it will not rotate(Refer to Fig. F-14)
   iii) After finishing step ii), turn Pulley Motor clockwise and make sure that (c-1) hole of Cam Mode fits with the Chassis hole and (b-4) hole of Cam Bracket as shown in Fig. D-5-5.(Refer to Fig. F-14)

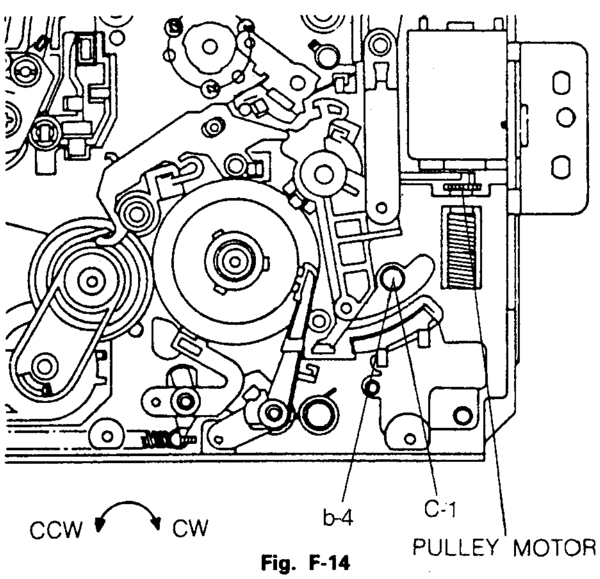
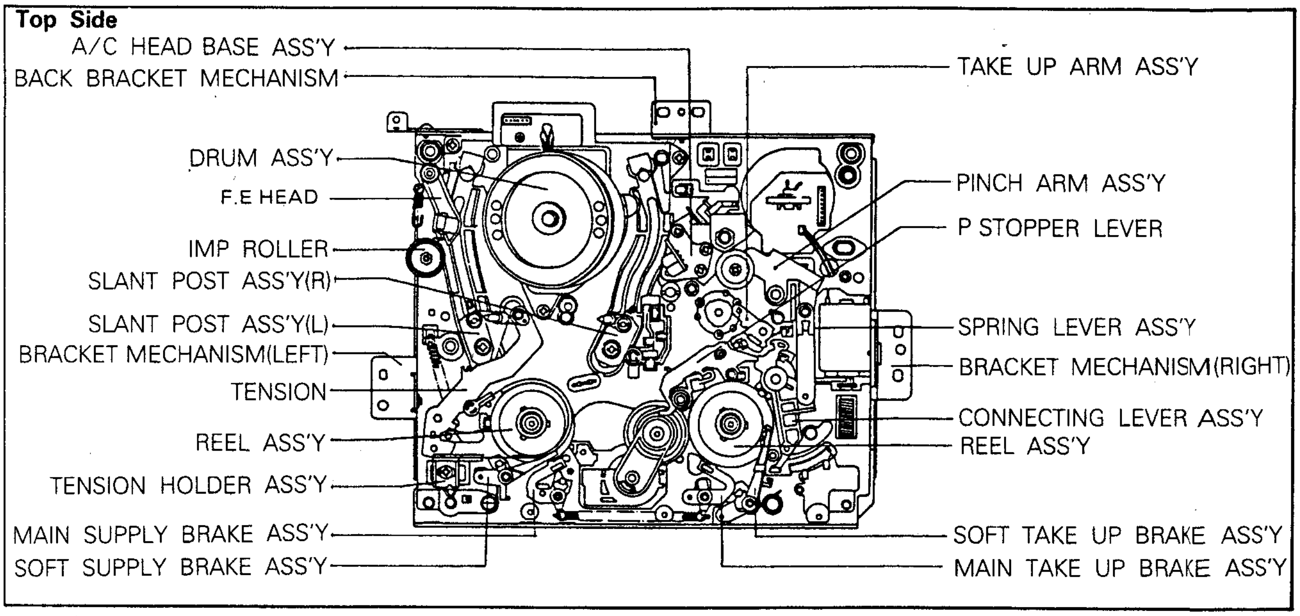


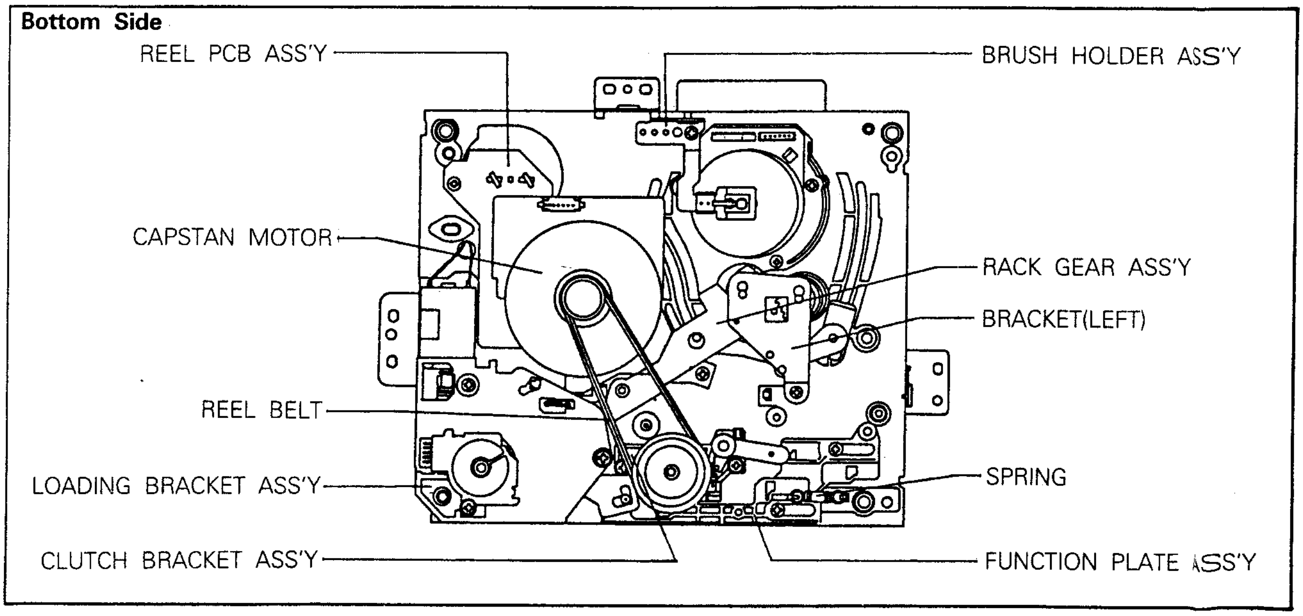
Fig. F-14

   iv) Assemble the Front Loading Mechanism while pulling the Carrier of the Front Loading Mechanism in the Eject direction.
(2) When the operating circuit of Loading Mechanism operates.
   i) Unplug the connector of the Front Loading Mechanism if it was connected.
   ii) Remove the power plug from the outlet if connected, and connect it to the outlet again. Wait until the LED of power button is off and confirm to agree with (b-4) hole of Fig. D-5-5 and (c-1) hole of Fig. D-5-5.(In case of VCP set).
   iii) But, if the (b-4) hole does not agree with (c-1) hole and power plug is connected to the outlet, remove power plug from the outlet and connect it again. Press the power button and make it power on. And, after pressing Eject button and waiting about 10 seconds, confirm to agree with(b-4) hole and (c-1) hole.(In case of VCR set.)
   iv) Assemble F/L Mechanism as the method of (1)-iv) in the state of according with the holes by the above methods.
   v) Connect F/L Mechanism connector.

DECK MECHANISM DISASSEMBLY

• Deck Mechanism Parts Location


Top Side
A/C HEAD BASE ASS'Y
BACK BRACKET MECHANISM
DRUM ASS'Y
F.E HEAD
IMP ROLLER
SLANT POST ASS'Y(R)
SLANT POST ASS'Y(L)
BRACKET MECHANISM(LEFT)
TENSION
REEL ASS'Y
TENSION HOLDER ASS'Y
MAIN SUPPLY BRAKE ASS'Y
SOFT SUPPLY BRAKE ASS'Y
TAKE UP ARM ASS'Y
PINCH ARM ASS'Y
P STOPPER LEVER
SPRING LEVER ASS'Y
BRACKET MECHANISM(RIGHT)
CONNECTING LEVER ASS'Y
REEL ASS'Y
SOFT TAKE UP BRAKE ASS'Y
MAIN TAKE UP BRAKE ASS'Y


Bottom Side
REEL PCB ASS'Y
CAPSTAN MOTOR
REEL BELT
LOADING BRACKET ASS'Y
CLUTCH BRACKET ASS'Y
BRUSH HOLDER ASS'Y
RACK GEAR ASS'Y
BRACKET(LEFT)
SPRING
FUNCTION PLATE ASS'Y

HEADS

1. FE(Full Erase)Head
2. A/C (Audio/Control)Head

MOTORS

3. Drum Motor Assembly
4. Capstan Motor
5. Loading Bracket Assembly

SENSOR

6. Reel PCB Assembly

MISCELLANEOUS

7. Impedance Roller
8. Clutch Bracket Assembly
9. Function Plate Assembly
10. Slant Post Assembly(L), (R)
11. Loading Gear Assembly(L),(R)
12. Tension Arm Assembly
13. Take-Up Arm Assembly
14. Pinch Arm Assembly
15. Main Supply, Take-Up Brake Assembly
16. Supply, Take-Up Soft Brake
17. Supply, Take-Up Reel Assembly
18. Pause Stopper

1. FE(Full Erase)Head(Fig. D-1)(Used in VCR Model).

1) Remove the connector.
2) Remove the Spring.
3) While pushing the hook on the deck bottom side, remove the FE Head Base Assembly.
4) Remove the P.C.B.
5) Remove the FE Head to slant angle from FE Head Base Assembly.

(Caution During Work)

When disassembling and assembling, be careful not to get the foreign substances on the Head.

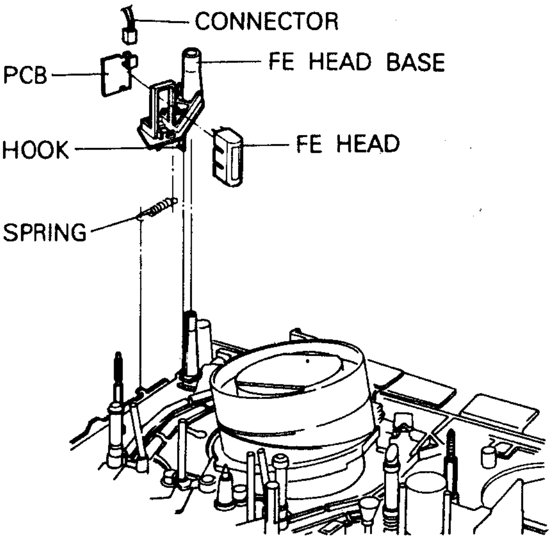

CONNECTOR
PCB
FE HEAD BASE
HOOK
FE HEAD
SPRING

Fig. D-1 FE(Full Erase)Head

2. A/C(Audio/Control)Head(Fig. D-2)

1) Remove the connector.
2) Remove the A/C Head adjuster from the Post, and then remove the A/C Head Base Assembly.
3) Loosen the Azimuth Adjuster Screw.
4) Loosen the screws (A).(B) and then remove the A/C Head.

(Adjustment after reinstallation)

After assembling, adjust the Tilt, Azimuth and CTL Track height of the A/C Head.

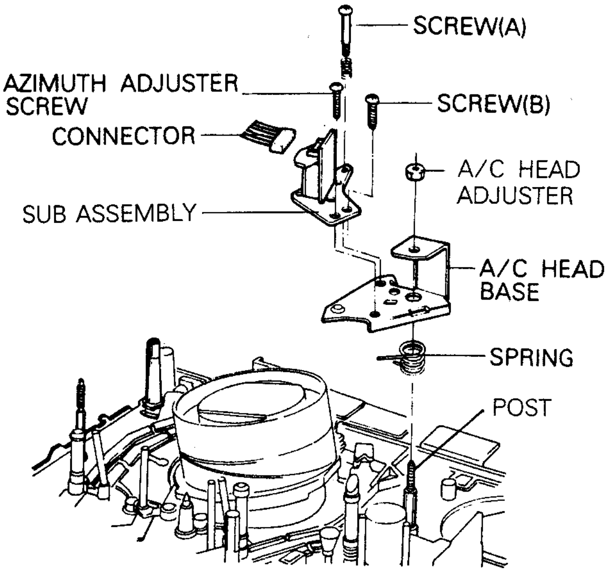

SCREW(A)
AZIMUTH ADJUSTER SCREW
SCREW(B)
CONNECTOR
A/C HEAD ADJUSTER
SUB ASSEMBLY
A/C HEAD BASE
SPRING
POST

Fig. D-2

3. Drum Motor Assembly(Fig. D-3)

1) Remove the Pre-Amp circuit board.
2) Remove the Deck.
3) Loosen a screw(A) and remove the Ground Brush.
4) Remove the connector.
5) Loosen three screws(B) and remove the Drum Motor assembly.

(Caution during work)

Do not touch the video head tips with fingers or tools.

(Adjustment after reinstallation)

It is necessary to adjust the Transport System and Servo P.G after replacing the drum motor assembly.

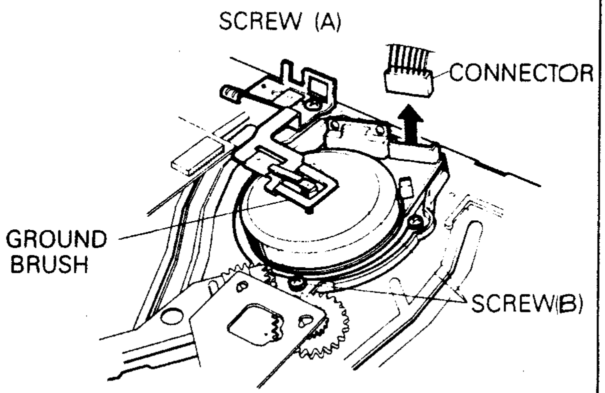
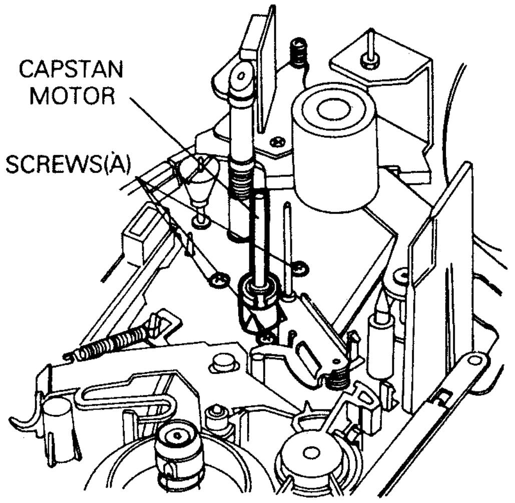

SCREW (A)
CONNECTOR
GROUND BRUSH
SCREW(B)

Fig. D-3 Drum Motor Assembly

4. Capstan Motor(Fig. D-4)

1) Remove the Reel Belt.
2) Disconnect the connector.
3) Loosen three screws(A), and remove the Capstan Motor on the deck bottom side.

Top View


CAPSTAN MOTOR
SCREWS(A)

Bottom View

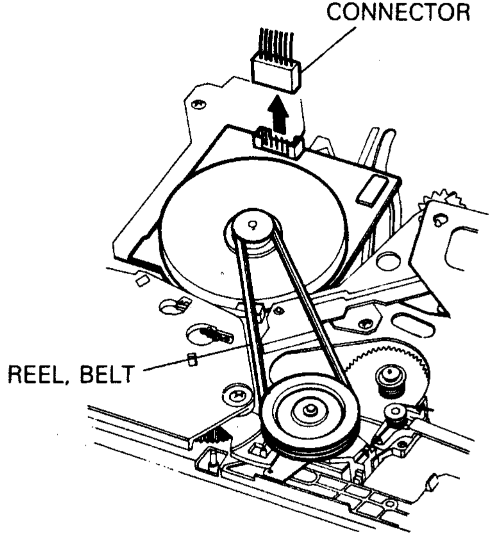

CONNECTOR
REEL, BELT

Fig. D-4 Capstan Motor

5. Loading Bracket Assembly(Fig. D-5)

1) Disconnect the connector from the deck top side.
2) Remove three screws from the deck bottom side.

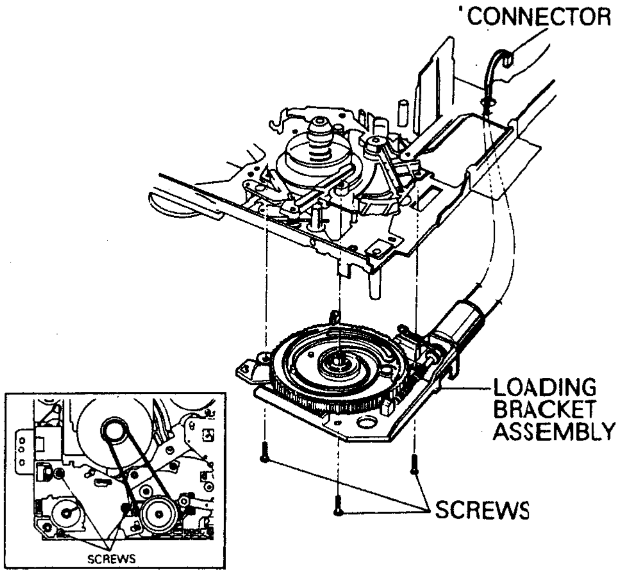

CONNECTOR
LOADING BRACKET ASSEMBLY
SCREWS
SCREWS

Fig. D-5 Loading Bracket Assembly

(Assembly Method)

1) Supply G1 through G12, with grease oil Molykote EM-30LG or the same quality oil.

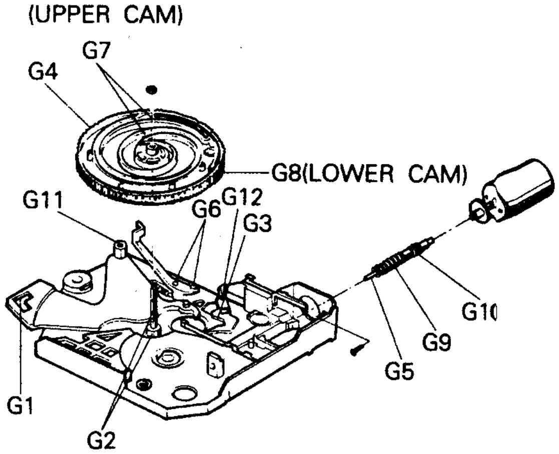

(UPPER CAM)
G7
G4
G8(LOWER CAM)
G11
G6
G12
G3
G10
G9
G5
G1
G2

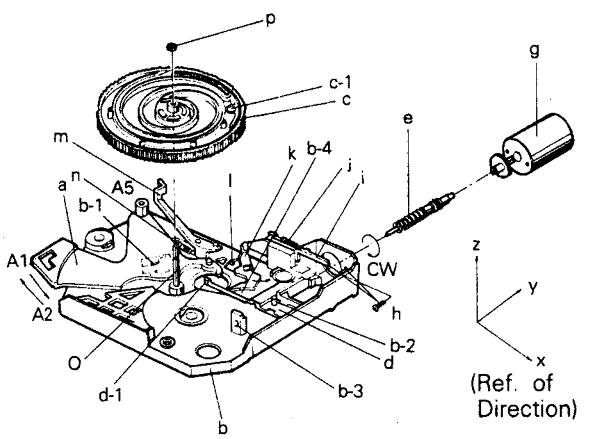
Fig. D-5-1

2) Assemble the B. Follower Lever (a) to the Hook (b-1) on the Cam Bracket (b) and pull it to the end of A1 direction.

3) Place correctly the Q Brake Stopper (d) to the Boss Guide (b-2) on the Cam Bracket(b).
Then press it down and insert it into the place in correct locking condition. Make sure that Q Brake Stopper (d-1) part returns to the former or original state after pulling and loosening Q Brake Stopper (d-1) part toward Z direction. If not, press it down again.

4) Turn again B Follower Lever (a) toward A2 direction so that it contacts with Q Brake Stopper (d-1).

5) Motor assembly; Insert correctly Worm Assembly (e) into the hole on the Cam Bracket (b) and tighten screws(h).



a : B. follower lever
b : Cam bracket
c : Cam mode
d : Q. brake stopper
e : Worm assembly
g : Motor Ass'y(Loading Motor)
h : Screws

i : Q. actuator lever
j : L.Q.A. spring
k : Q. brake lever
l : L. brake spring
m : Caps soft lever
n : Lever caps spring
o : Cam shaft
p : Stopper washer

b-1 : Hook
b-2 : Boss Guide
b-4 : Cam Mode Setting Hole
c-1 : Cam Mode Position Hole
d-1 : Q. Brake Stopper

Fig. D-5-2

6) After finishing the 5) above, make sure that the clearance of the worm assembly(e) in the shaft direction is less than 0.1~0.3mm.

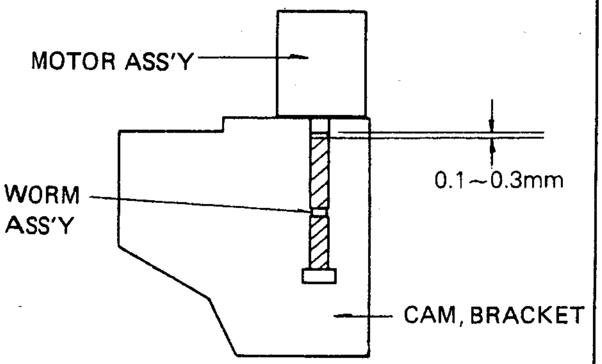


Fig. D-5-3

7) After preassembling the Lever Brake Spring (l) to the Q Brake Lever (k), reassemble it by turning in A4 direction. And then, connect the end of the Lever Brake Spring (l) to the hook on the Cam Bracket (b) (Refer to Fig. D-5-2).

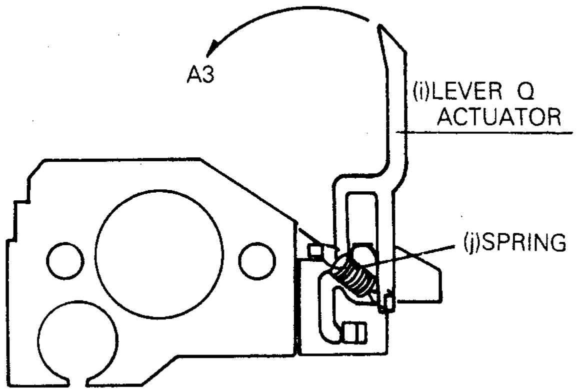


Fig. D-5-4

8) Turn the Q Actuator Lever (i) in the A3 direction, assemble it and install the Lever Q Actuator Spring (j) to the two hooks as shown in Fig. D-5-4.

9) Assemble the Caps Soft Lever (m) and connect the Lever Caps Spring (n) to the hook on the Cam Bracket (Refer to Fig. D-5-2).

10) Turn the Q Brake Lever (k) toward the A4 direction, and lock it to Q Brake Stopper (d-1).
If not, make it contact with the (d-1) by turning in the direction of A1 or A2(Refer to Fig. D-5-5).

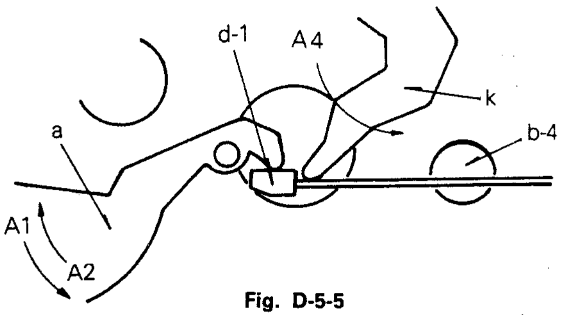


Fig. D-5-5

11) After finishing the 10) above, assemble the Cam Mode (c) from the upper part to the lower part while adjusting the hole.(c-1) on the Cam Mode (c) to the hole (b-4) on the Cam Bracket (b) (refer to fig. D-5-5, D-5-6).
At this time, make sure that the washer (p)locking slot on the cam shaft(o) can be seen.
If not, press the Cam Mode (c) downward while pushing slightly the Caps Soft Lever (m) in the A5 direction.(refer to fig. D-5-2).

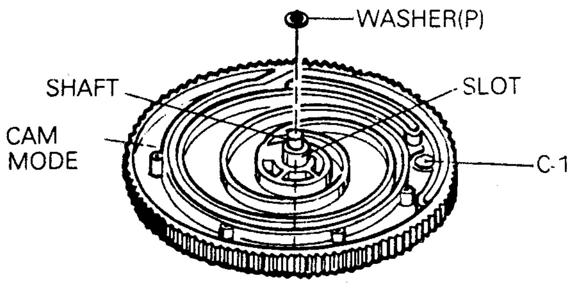


Fig. D-5-6

12) Insert the washer (p).

13) Mode Switch assembly method
  a) Make sure that hole (c-1) coincides with hole (b-4) correctly at the upper and lower parts.
     Then, rotate the Worm Ass'y(e) five or six revolution by hand counterclockwise in the Motor Shaft direction.
  b) After finishing step a) above, reverse the entire set and assemble to press down the Mode Switch by adjusting the mark " \V/ " on the Cam Mode (c) and the mark "/V\" on the Mode Switch.(Refer to Fig. D-5-7)

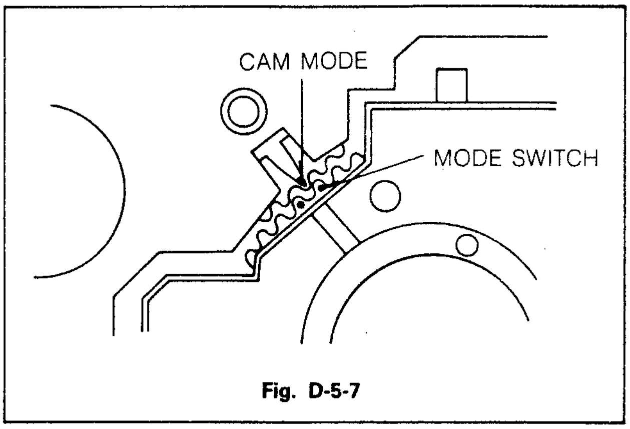


Fig. D-5-7

14) After assembling the mode switch, reverse the set again and fit the hole (b-4) and the hole (c-1) together by turning the Worm Ass'y (e) clockwise.

15) Assembly of the deck mechanism.
  a) Make the Reel Table in the deck mechanism face downward.
  b) Push closely the Lever Connector Pin (s) and Rack Gear Pin (t) in the direction of the arrow.(Refer to Fig D-5-8)

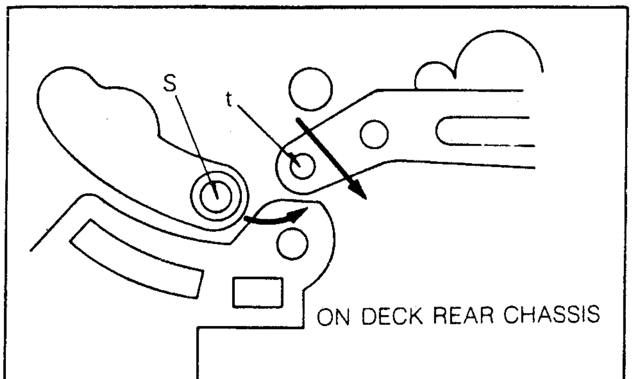


Fig. D-5-8

  d) Pull the Cassette Carrier in the Front Loading Mechanism in the eject direction if it were assembled.
  d) Place the Loading Bracket Assembly on the proper position of deck and tighten the screws.(Refer to Fig. D-5-9)

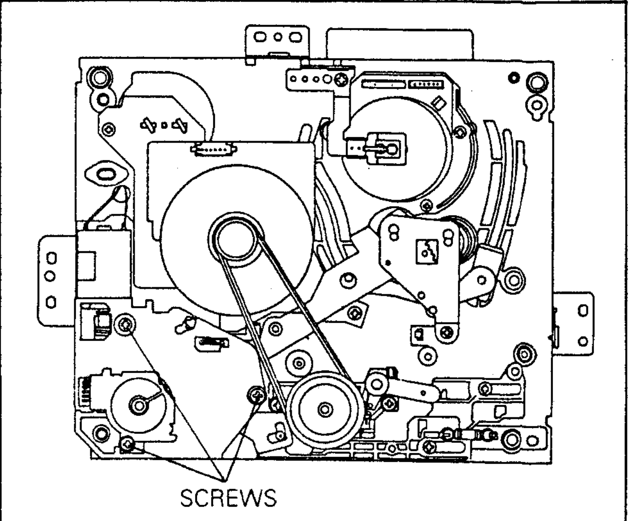


Fig. D-5-9

6. Reel PCB Assembly(Fig. D-6)

1) Remove the Capstan Motor.
2) Disconnect two connectors from the deck top side.
3) Remove two screws from the deck bottom side.
4) Remove the Hook (A)/(B) and then while lifting Reel PCB ASS'Y up in the A direction, remove it in the B direction

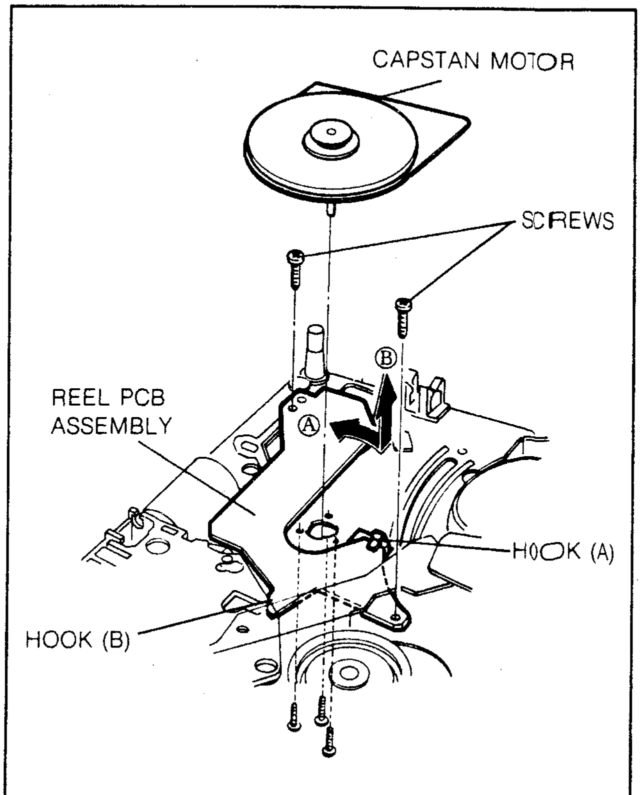


Fig. D-6 Reel PCB Assembly

(LED Sensor)

1) Remove the solder from the PCB solder side.
2) Remove the LED sensor from LED Holder.
3) Remove the Hook(A)/(B)and then remove the LED Holder.

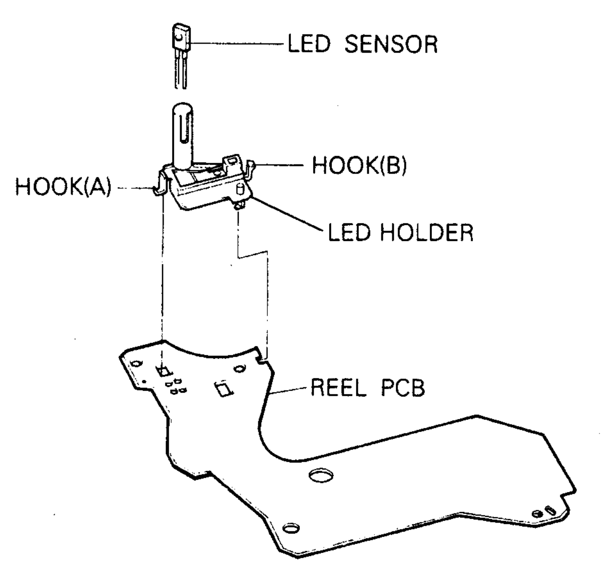

LED SENSOR
HOOK(A)
HOOK(B)
LED HOLDER
REEL PCB

Fig. D-6-1 LED Sensor

(Reel Sensor)

1) Remove the solder from the PCB solder side.
2) Remove the Reel sensor from the Sensor Holder.
3) Remove the Hook(A) and then remove the Sensor Holder.

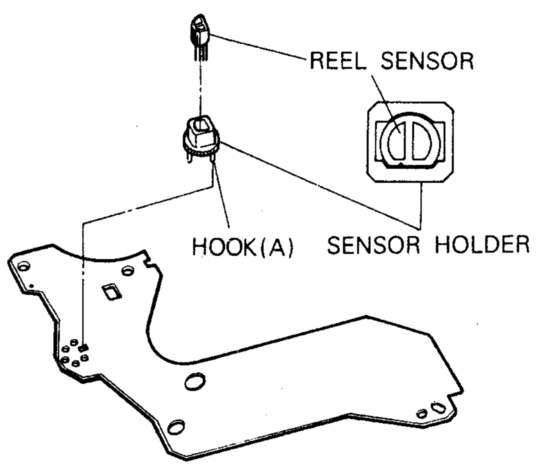

REEL SENSOR
HOOK(A)
SENSOR HOLDER

Fig. D-6-2 Reel Sensor

(DEW Sensor)

1) Remove the wire from PCB Solder Side.
2) Remove the Dew sensor from the Dew holder while pushing the Hook (A),(B) up and down.

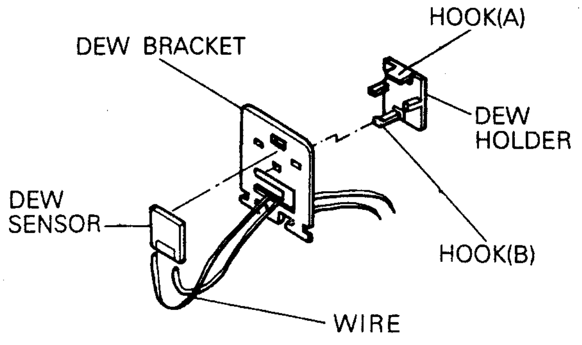

HOOK(A)
DEW BRACKET
DEW HOLDER
DEW SENSOR
HOOK(B)
WIRE

Fig. D-6-3

7. Impedance Roller(Fig. D-7)

1) Remove the Nut.
2) Remove the Impedance Roller.
3) Remove the sleeve P(1), Limiter Plate, Bushing P(1) and spring in order.

(Adjustment after reinstallation)

Adjust Guide Post Height after tightening the Nut.

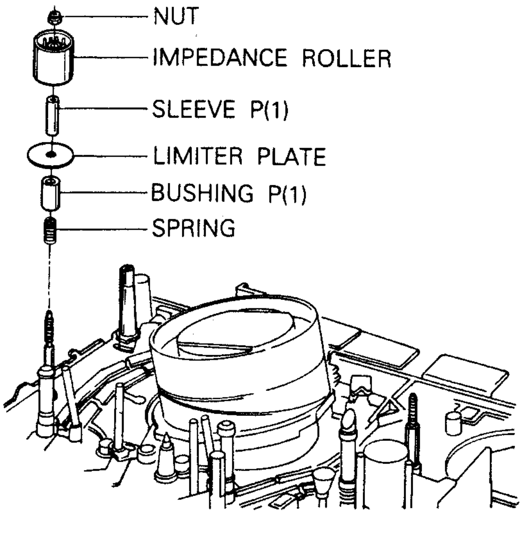

NUT
IMPEDANCE ROLLER
SLEEVE P(1)
LIMITER PLATE
BUSHING P(1)
SPRING

Fig. D-7 Impedance Roller

8. Clutch Bracket Assembly(Fig. D-8)

1) Remove the belt from the deck bottom side.
2) Remove two screws from the deck bottom side.
3) Remove the Clutch Bracket Assembly by turning the gear part of the Idler in the direction of the Supply Reel.

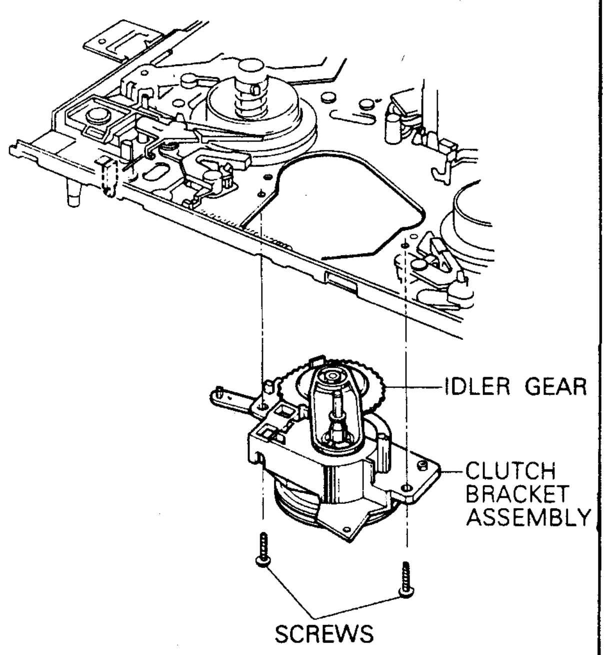

IDLER GEAR
CLUTCH BRACKET ASSEMBLY
SCREWS

Fig. D-8 Clutch Bracket Assembly

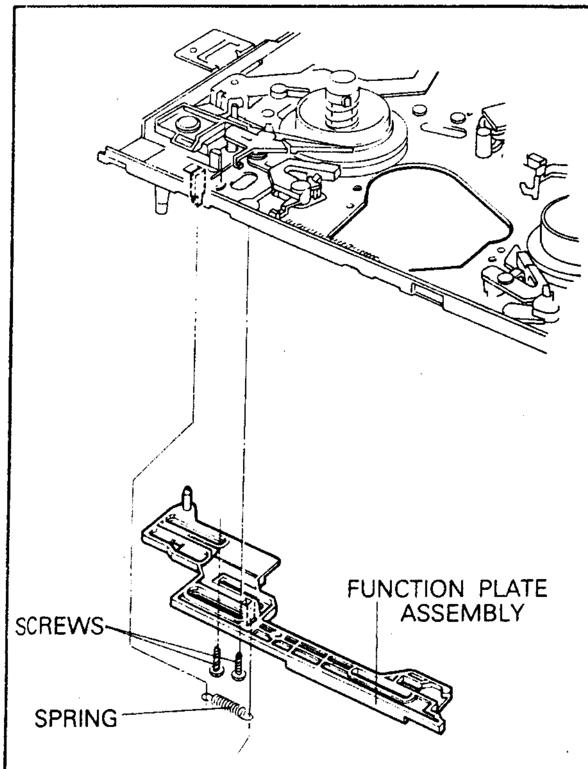

FUNCTION PLATE ASSEMBLY
SCREWS
SPRING

Fig. D-9 Function Plate Assembly

9. Function Plate Assembly(Fig. D-9)

1) Remove the Loading Bracket Assembly. (Fig. D-5)
2) Remove the Clutch Bracket Assembly. (Fig. D-8)
3) Remove the spring.
4) Remove two screws.
5) Remove the Function Plate Assembly.

10. Left/Right Slant Post Assembly(Fig. D-10)

1) Remove the washer.
2) Remove the set screw by hexagonal wrench.
3) Remove the Guide Roller by rotating.

(Cautions when reinstalling)

Assemble the set screw to the slant base so that the height of the Guide Roller becomes 25.8±0.05mm by turning the Guide Roller.
Make sure that the set screw rotating torque is 800-1200gcm

(Adjustment after reinstalling)

Adjust the Guide Roller Height after replacing the Slant Post Assembly.

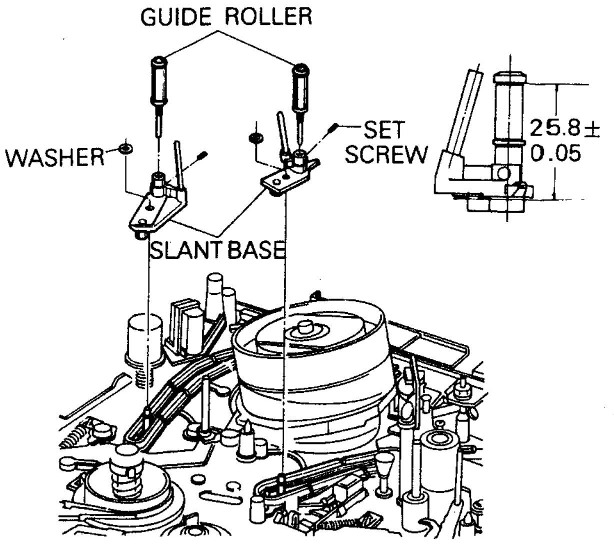

GUIDE ROLLER
WASHER
SET SCREW
SLANT BASE
25.8±0.05

Fig. D-10 Left/Right Slant Post Assembly

11. Loading Gear Assembly(L),(R)(Fig. D-11)

1) Remove the Slant Post Assembly(L),(R)from the deck top side. (Fig. D-10)
2) Remove the Loading Bracket Assembly from the deck bottom side (Fig. D-5)
3) Remove the Reel Belt.
4) Remove one screw.
5) Remove the Bracket.
6) Remove the Washer.
7) Remove the Rack Gear.
8) Remove the Loading Gear Assembly(L), (R).

(Reassembly Method)

Assemble the Loading Gear Assembly so that two "▼" marks on two Gear are in line with each other, and assemble so that the Loading Gear Assembly post is inserted to the Guide groove.

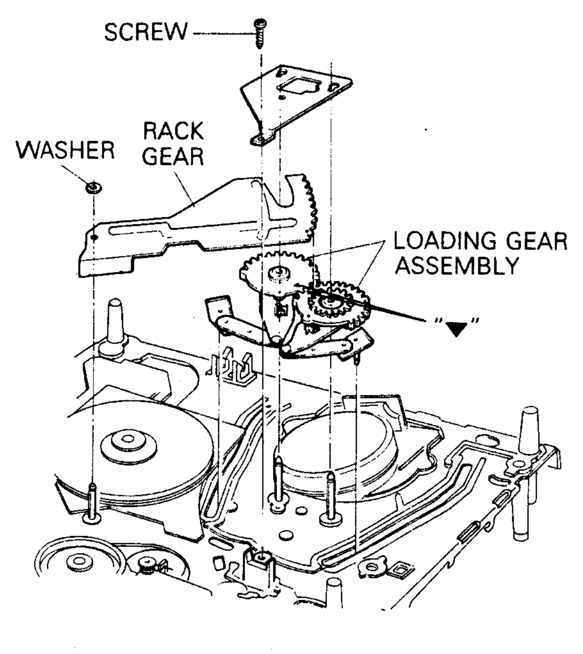

SCREW
RACK GEAR
WASHER
LOADING GEAR ASSEMBLY
"▼"

Fig. D-11 Loading Gear Assembly

12. Tension Arm Assembly(Fig. D-12)

1) Remove the spring from the deck hook.
2) Remove one screw.
3) Remove the Tension Arm Assembly.

(Adjustment after reinstallation)

Adjust the Tension Post Position and Tension with Tension Cassette.

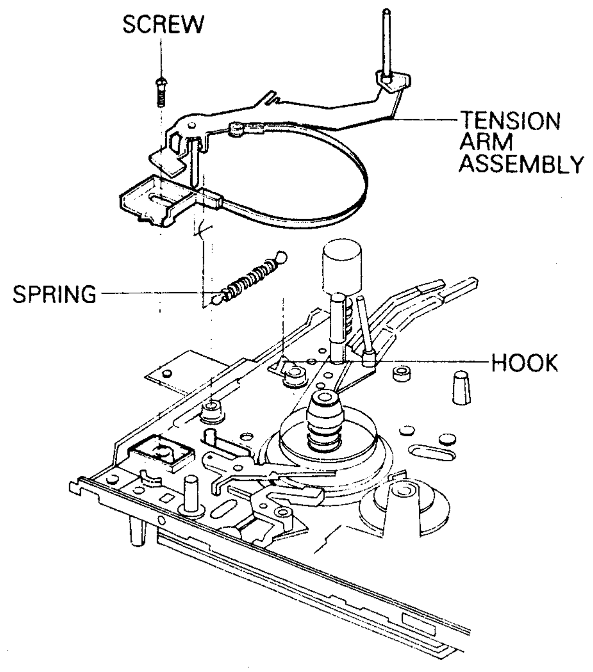

SCREW
TENSION ARM ASSEMBLY
SPRING
HOOK

Fig. D-12 Tension Arm Assembly

13. Take-Up Arm Assembly(Fig. D-13)

1) Remove the Pintch Arm Sub-Assembly.
2) Turn the Take-Up Arm clockwise so that it contacts with Take-Up Arm Post(A).
3) Remove the spring.

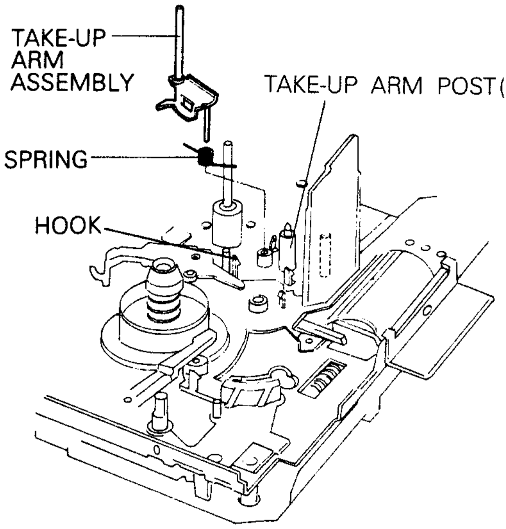

TAKE-UP ARM ASSEMBLY
TAKE-UP ARM POST(A)
SPRING
HOOK

Fig. D-13 Take-Up Arm Assembly

14. Pinch Arm Assembly(Fig D-14)

1) Remove two washers.
2) Remove the Pinch Arm Sub-assembly.
3) Remove the Spring Lever Asssembly from the Connect Lever Assembly.
4) While pushing the Hook of deck chassis, remove the Connect Lever Assembly.

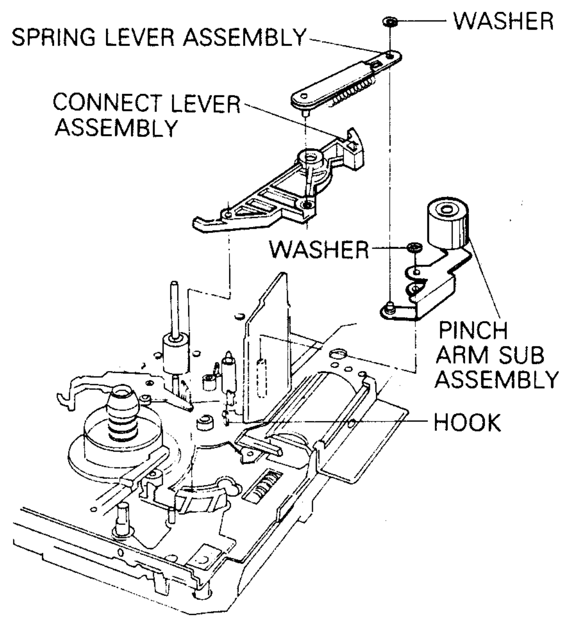

SPRING LEVER ASSEMBLY
WASHER
CONNECT LEVER ASSEMBLY
WASHER
PINCH ARM SUB ASSEMBLY
HOOK

Fig. D-14 Pinch Arm Assembly

15. Main Supply, Take-Up Brake Assembly (Fig. D-15)

1) While pulling the Hook (A) and Hook(B) outward, remove the Main Take-Up/Supply Brake.
2) Remove the spring.

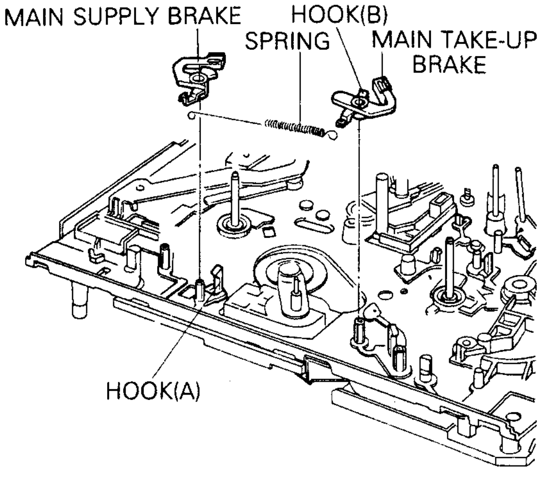

MAIN SUPPLY BRAKE
HOOK(B)
SPRING
MAIN TAKE-UP BRAKE
HOOK(A)

Fig. D-15 Main Supply/Take-Up Brake Assembly

16. Supply/Take-Up Soft Brake(Fig. D-16)

1) While pulling the Hook(A) outward, remove the Soft Supply Brake.
2) While pulling the Hook(B) outward, remove the Soft Take-Up Brake.

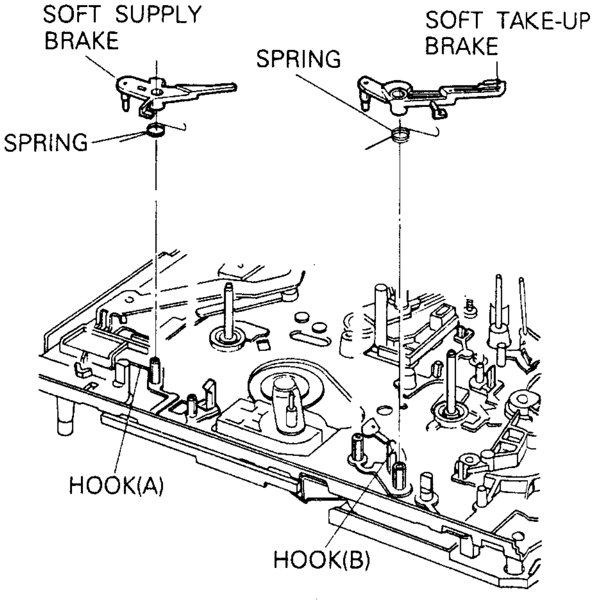

SOFT SUPPLY BRAKE
SPRING
SOFT TAKE-UP BRAKE
SPRING
HOOK(A)
HOOK(B)

Fig. D-16 Supply, Take-Up Soft Brake

17. Supply, Take-Up Reel Assembly(Fig. D-17)

1) Remove two washers.
2) Remove the Tension Arm Assembly and then remove the Supply Reel Assembly.

(Adjustment after reinstallation)

Adjust tension after replacing the Supply Reel Assembly.

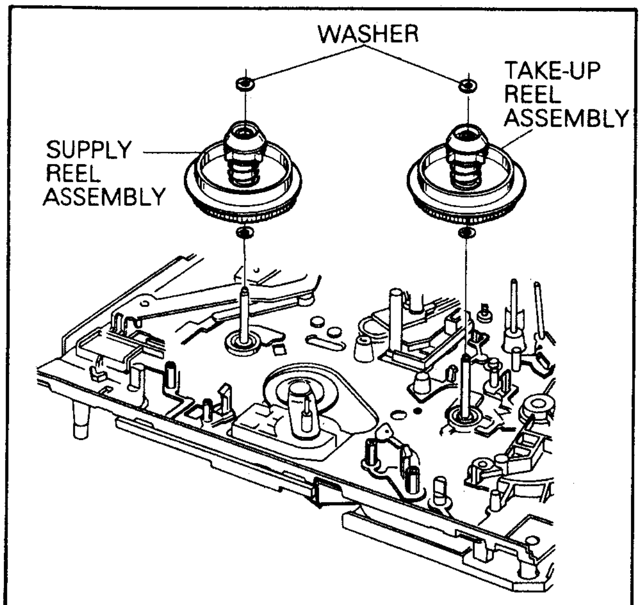

WASHER
TAKE-UP REEL ASSEMBLY
SUPPLY REEL ASSEMBLY

Fig. D-17. Supply, Take-Up Reel Assembly

18. Pause Stopper(Fig. D-18)

1) Remove the spring.
2) While pushing the Hook(A), remove the Pause Stopper.

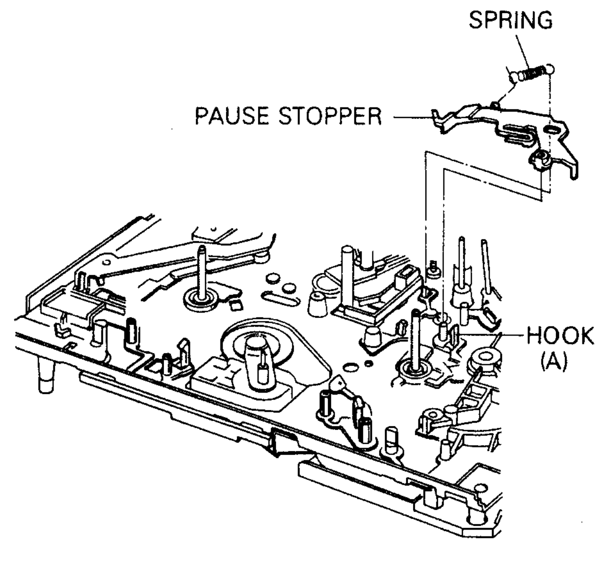
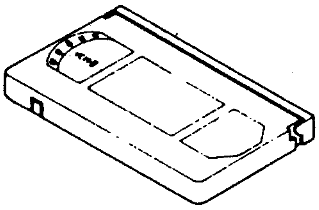
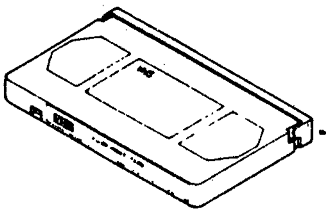
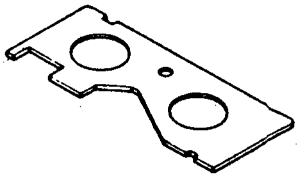
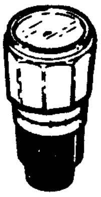
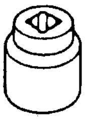
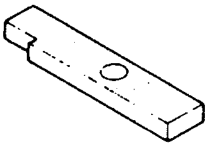
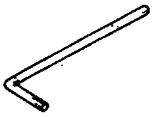
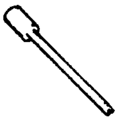
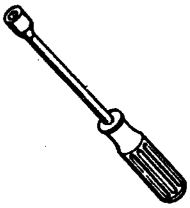

SPRING
PAUSE STOPPER
HOOK (A)

Fig. D-18 Pause Stopper.

MECHANISM ADJUSTMENTS

• Jigs and Tools for Deck

1. Back Tension Meter Parts No. D00-D006  VHT-100	2. Alignment tape Parts No. ┌ NTSC ; DTN-0001 └ PAL ; DTN-0002 	3. Master plane Parts No. D09-R002 
4. Torque gauge Parts No. D00-D002  600ATG	5. Torque gauge adaptor Parts No. D09-R001 	6. Reel table height jig Parts No. D09-R003 
7. 1.5mm hexagonal wrench Parts No. DTL-0002 	8. Post height adjusting driver Parts No. DTL-0005 	9. M3 nut driver Parts No. DTL-0006 

1. Mechanism State Switch(Mode Switch) Check

Purpose : To detect accurately the mechanism state and prevent the mechanism from malfunction.

Test Equipment/jigs	VCR State	Check Point
● Blank tape	● Eject Mode (with cassette ejected)	● Mechanism state switch(Mode Switch) and Cam

Check Procedure

1) Turn the VCR on, load a blank tape and eject the tape by pressing eject button.

2) Remove the Bottom Cover and check that the mark " ♈ "on the Cam and the mark " ⌒‿⌒ "on the Mechanism State Switch are aligned.

3) If the above alignments are not obtained. Adjust as follows,
   (1) Remove the Front Loading Mechanism in the stode of power off, and turn the power on to move the Loading Bracket Assembly off.
   (2) Reassemble or check each part of Loading Bracket Assembly (See the Front Loading Mechanism Disassembly).
   (3) Reinstall the Loading Bracket Assembly in above condition.
   (4) Turn the power on and perform the various operations to check that loading and unloading are corrected.

Check Diagram.

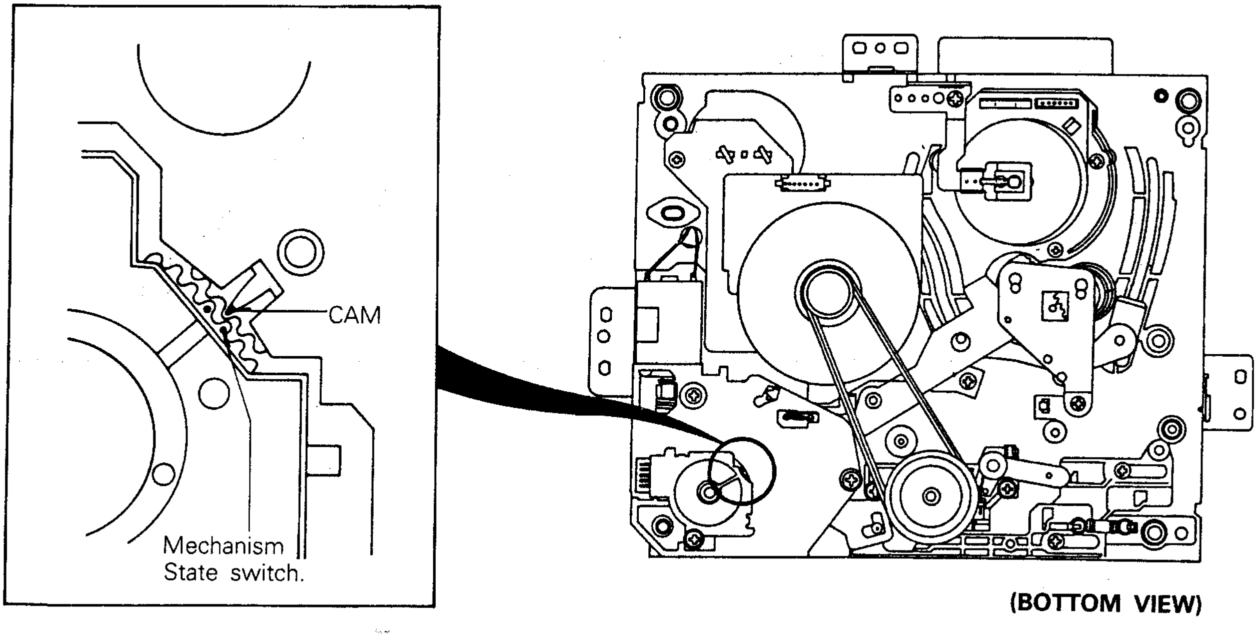


Fig. A-1

2. Preparation for Adjustment (To set VCR to the loading state without inserting a cassette)

1) Unplug the power cord from the connector.
2) Remove the top cover and Front Loading mechanism.
3) Plug the power cord into the connector.
4) Turn the VCR on.
   The VCR can accept input of each mode in this case. However the rewind and review operation cannot be peformed for more than a few seconds because the take-up reel table is in the stop state and reel pulses cannot be detected.

(Note)

Always return the VCR to the Front Loading Mechanism Assembling State in the following order after the above operations have been performed.

1) Press the Eject button after turning the power on.
2) Wait for about 10 seconds until searching out the assembly position.
3) Assemble the Front Loading Mechanism and connect Front Loading Mechanism Connector.
4) Refer to the "Front Loading Mechanism Disassembly" part which is described before.

3. Reel Table Height Adjustment

Purpose: To set the reels of the cassette to the specified height, thus determine the height of tape.

Test equipment/jigs	Preparation for adjustment	VCR State	Adjustment points
• Master Plane • Reel Table Height Jig	1) Remove the Front Loading Mechanism. 2) Mount the Master Plane and place the Reel Table Height Jig on it.	——	• Washers in the Supply and Take-Up Reel Tables.

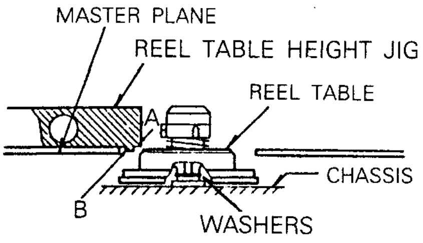
Adjustment procedure

1) Check that the Reel Table is between sections A and B of the Reel Table Height Jig.
2) If the table is not between sections A and B of the jig, replace the washers (two types, 0.3mm and 0.5mm thick) in the Reel Table or adjust them.

****CAUTION****

When the Tension Arm and Tension Band are removed, adjust the tension post position and tension after reinstalling them.

Adjustment Diagram



SUPPLY AND TAKE-UP REEL TABLE

Fig. A-2

4. Tension Post Position and Tension Adjustment

Purpose: To make the tension of tape constant so that the contact between the video heads and tape is stabilized.

Test Equipment/jigs	VCR State	Adjustment Point
● Tension Meter (Tension adjustment)	● Play without cassette and with a Tension Meter	● Holder Band(A)

Adjustment Procedures

〈Position Adjustment〉

1) Perform loading tape without inserting a tape and loosen the Holder Band(A) retaining a screw.
2) Insert the (-) type driver between the Holder Band(A) and the "V" groove of the chassis.
3) Move the Holder Band(A) right and left and set the gap between the tension post and chassis to 1~2.5mm.
4) Tighten the Holder Band(A) retaining a screw.
5) After adjustment is completed, perform loading without inserting a cassette and recheck the tension post position.

〈Tension Adjustment〉

1) Play the Tension Meter and read the Tension Meter : 40~50g·cm (reference value).
2) If the result is abnormal
   (1) over the standard: loosen the screw, move the Holder Band(A) right a little, tighten the screw and make sure that this adjustment is correct.
   (2) below the standard: loosen the screw, move the Holder Band(A) left a little, tighten the screw and make sure that this adjustment is correct.

****CAUTION****

The range of movement of Holder Band(A) should be within ±1.5mm while being adjusted.
If the range is over, you should recheck the Reel Brake, Tension Arm and Spring.

Adjustment Diagram

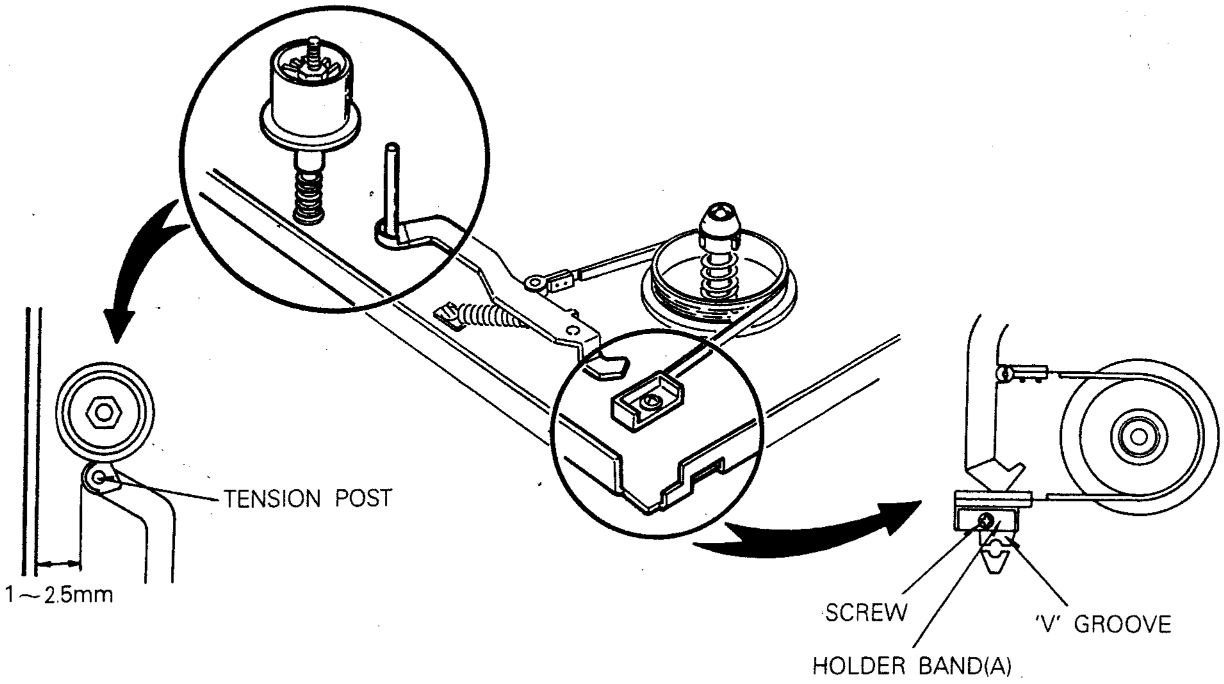


Fig. A-3

5. Checking Torque

Purpose: It is necessary to check the tension, torque and compression force at the tape take-up section and moving section to make the tape run smoothly and satisfy the basic performance of the VCR. Check these if the tape does not run smoothly or the tape speed is abnormal.

Test equipment/jigs	VCR state
● Torque Gauge ● Torque Gauge Adaptor	● Set the VCR to each operation mode without inserting a cassette. (See '2·Preparation for Adjustment')

Item	VCR Operation mode	Measurement reel	Measurement values
Main brake torque	Stop	Supply and take-up reels	170g·cm or more
Slack removal torque	Unloading	Supply reel	110~200g·cm
Fast forward torque	Fast forward	Take-up reel	400g·cm or more
Rewind torque	Rewind	Supply reel	400g·cm or more
Play take-up torque	Play	Take-up reel	80~200g·cm
Back-tension torque	Fast forward	Supply reel	20~40g·cm
	Rewind	Take-up reel	

Checking Method

The values are measured by using a torque gauge and torque gauge adaptor with the torque gauge fixed.

Note: This value is measured when the VCR is shifted in the unloading direction from the fast forward or rewind mode and quick braking is applied to both Reel Tables

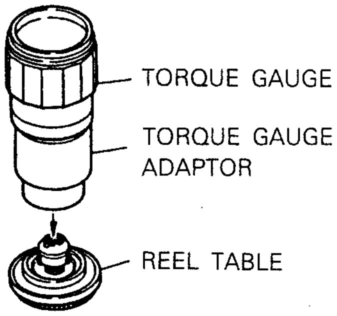


Fig. A-4

6. Guide Post Height Adjustment

Purpose : To control tape height.

Test Equipment/jigs	VCR State	Adjustment Points
● Master Plane ● Blank Tape ● Reel Table Height Jig ● Post Height Adjusting Driver ● M3 Nut Driver	● Mount the Master Plane and place the Reel Table Height Jig on it.	● Nuts on Impedance Roller ● Guide Post

Adjustment Procedures

1) Set the clearance between the bottom of the Impedance Roller Flange and under cut of Reel Table Height Jig to 0.6~0.7mm.(Fig. A-5-1)
2) Set the clearance between the bottom of the Guide Post upper flange and top of the Reel Table Height Jig to 0 ~ 0.2mm. (Fig. A-5-2)
3) Load a blank tape to run it and check that the tape does not ride over the upper and lower flanges of the guide post and lower flange of Impedance Roller.
4) If the tape rides over either flange, adjust the height of Impedance Roller and Guide Post as followes. (Fig. A-5-3)
   - If the tape rides over the upper flange, turn the nut counterclockwise.
   - If the tape rides over the lower flange, turn the nut clockwise.

Adjustment Diagrams

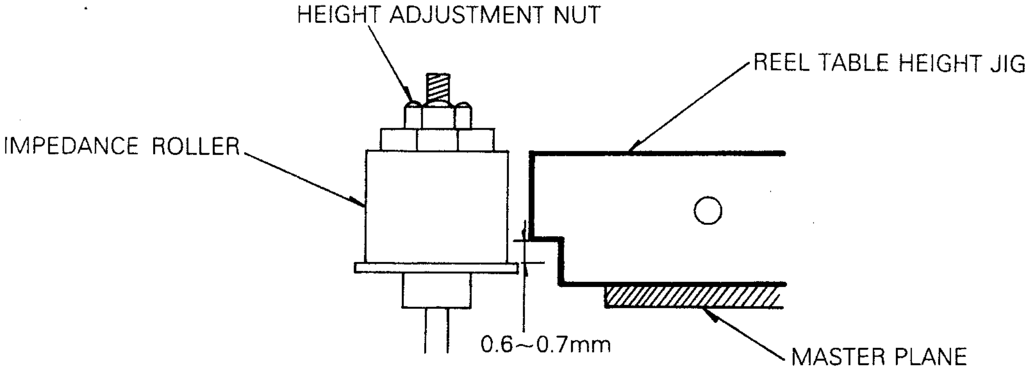

HEIGHT ADJUSTMENT NUT
REEL TABLE HEIGHT JIG
IMPEDANCE ROLLER
0.6~0.7mm
MASTER PLANE

Fig. A-5-1

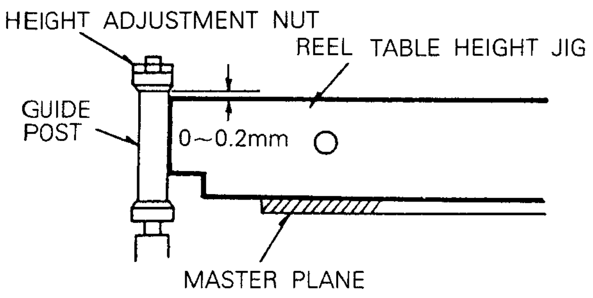

HEIGHT ADJUSTMENT NUT
REEL TABLE HEIGHT JIG
GUIDE POST
0~0.2mm
MASTER PLANE

Fig. A-5-2

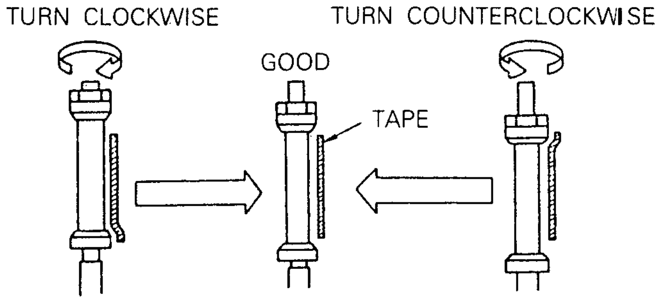

TURN CLOCKWISE
TURN COUNTERCLOCKWISE
GOOD
TAPE

Fig A-5-3

Fig. A-5

7. Guide Roller Height Adjustment

Purpose: To regulate the height of tape so that the bottom of tape runs along the tape guide line on the lower drum.

A. Coarse Adjustment

Test equipment/jigs	VCR State	Adjustment point
● Master Plane ● Reel Table Height Jig ● Hexagonal Wrench ● Post Height Adjusting Driver	● Mount the Master Plane and place the Reel Table Height Jig on it.	● Height Guide Roller Height Adjustment Screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

1) Loosen the Guide Roller retaining screw (so that the Guide Roller does not turn during loading, unloading and play).
2) Align the bottom of the Guide Roller's upper flange and the top of the Reel Table Height Jig.
3) Perform the next precise adjustment.

Adjustment Diagram

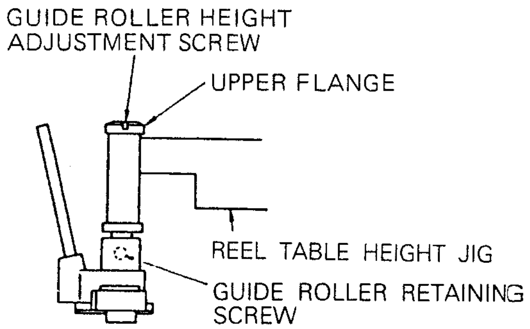

GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
UPPER FLANGE
REEL TABLE HEIGHT JIG
GUIDE ROLLER RETAINING SCREW

Fig. A-6

B. Precise Adjustment

Test equipment/ jigs	Test equipment Connection points	VCR state	Adjustment point
● Oscilloscope ● Post Height Adjusting Driver ● Alignment Tape (30HMP-2) ● Hexagonal wrench	● Ch-1 : PB RF Envelope ● Ch-2 : SW 30Hz ● Head Switching Output Point ● RF Envelope Output Point	● Play an alignment tape.	● Guide Roller Height Adjustment Screws.

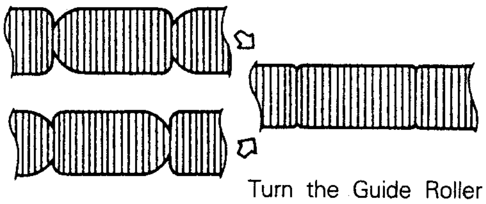
Adjustment Procedure

1) Play an alignment tape after connecting the probe of the oscilloscope to RF Envelope Output Jack and Head Switching Output Jack.
2) Tracking control (in PB mode) : Center position (When this adjustment is performed after the drum assembly has been replaced, set the tracking control so that the RF output is maximum.)
3) Height adjustment screw: Flatten the RF waveform.
4) Turn (Move) the tracking control (playback) clockwise and counterclockwise (to the right and left).
5) Check that the drops of RF output are uniform at the start and end.
6) Tighten the Guide Roller retaining screw.

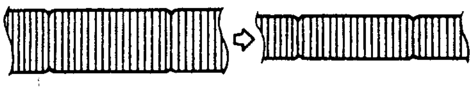
****CAUTION****

Adjust carefully for the tape not to be folded or wrinkled on account of the excessive or insufficient adjustment.

Waveform Diagrams



Turn the Guide Roller Height Adjustment Screw slightly to flatten the waveform.



Tracking control at center

Turn (Move) the tracking control to both directions.

Connection Diagram

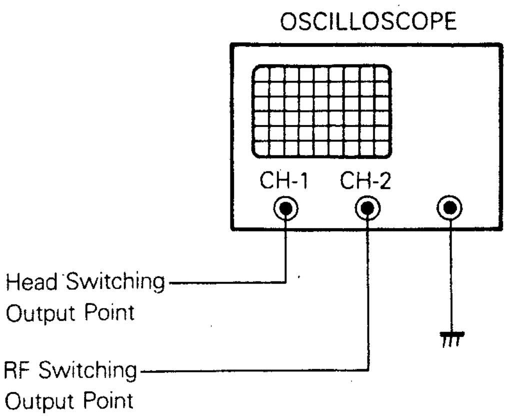


Fig. A-7

8. Audio/Control(A/C) Head Adjustment

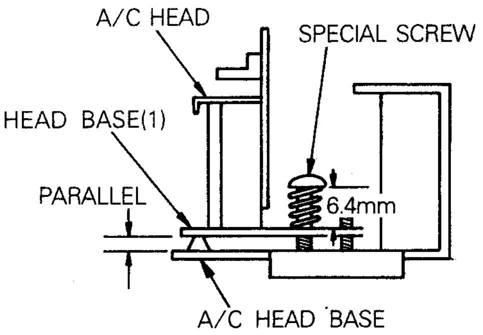
Purpose: To keep the contact between the tape and head so that the specified track is recorded and played back.

A. Coarse Adjustment

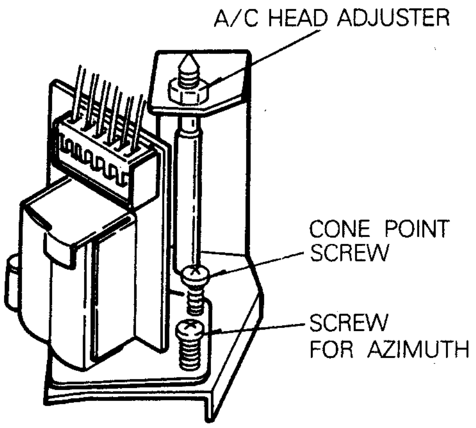
Test equipment/jigs	VCR state	Adjustment points
● Master Plane ● Reel Table Height Jig ● M3 Nut Driver	● Mount the Mater Plane and place the Reel Table Height Jig on it.	● Special screw ● Cone Point Screw for tilt ● Screw for Azimuth ● A/C Head Adjuster
● Blank tape	● Run the blank tape	

Adjustment Procedure/Adjustment Diagram

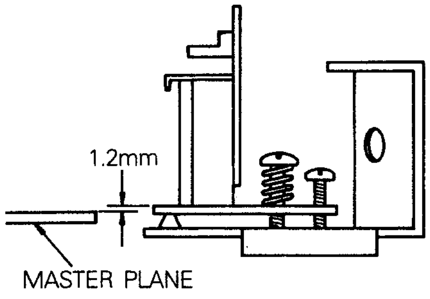
1) Tighten the spring section of the special screw so that it protrudes 6.4mm (approx.) over the top of Head Base(1).


A/C HEAD
SPECIAL SCREW
HEAD BASE(1)
PARALLEL
6.4mm
A/C HEAD BASE

2) Turn the Screw for Azimuth and Cone Point Screw so that the Head Base(1) and A/C Head Base are parallel.

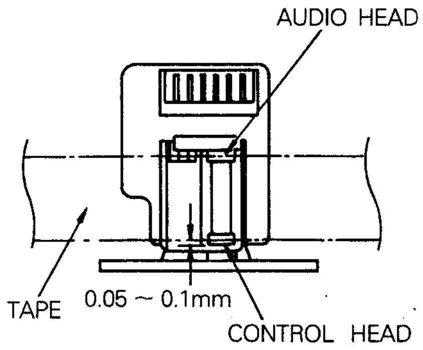

A/C HEAD ADJUSTER
CONE POINT SCREW
SCREW FOR AZIMUTH

3) Turn the A/C Head Adjuster until the clearance between the Master Plane and Head Base(1) is approx. 1.2mm.


1.2mm
MASTER PLANE

4) Remove the adjustment jigs, load a blank tape and set the VCR to the play mode.

5) Check that there is no conspicuous curling and riding over around the A/C head. If there is conspicuous curling or riding over, readjust the Cone Point Screw, Screw for Azimuth and A/C Head Adjuster. When the bottom edge of tape is 0.05 ~ 0.10mm from the bottom edge of the control head's core, the height of A/C head is ideal.


AUDIO HEAD
TAPE
0.05 ~ 0.1mm
CONTROL HEAD

6) Perform the precise adjustment continuously.

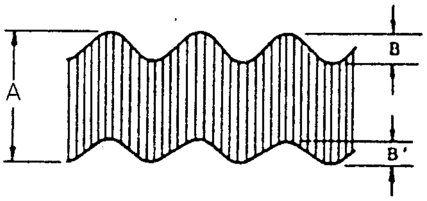
B. Precise Adjustment

Test equipment/jigs	Test equipment connection point	VCR state	Adjustment points
● Oscilloscope	● Audio output jack	● Play an alignment tape 7kHz section	● Screw for azimuth ● A/C Head adjuster ● Cone point screw
● Alignment tapes ● M3 Nut Driver	——		

Adjustment Procedure

1) Connect the probe of oscilloscope to audio output jack.
2) Adjust the screw for azimuth, A/C Head adjuster and cone point screw slightly and alternately so that a audio output is maximum and flat(minimum fluctuation)

Waveform Diagram



A:Maximum BB':Minimum

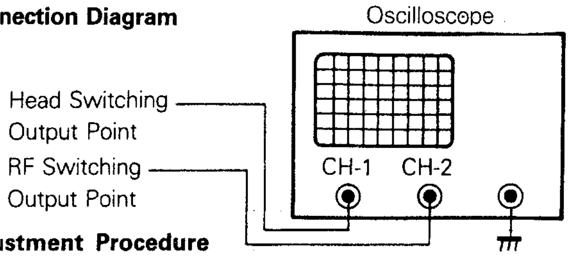
Fig. A-8

9. X-Value Adjustment

Purpose: To obtain compatibility with other VCRs.

Test equipment/jigs	Test equipment connection points	VCR state	Adjustment point
● Oscilloscope ● Alignment tapes ● Post Height Adjusting Driver	●CH-1: PB RF Envelope ● CH-2: SW 30Hz ● Head Switching Output Point ● RF Envelope Output Point	● Play an alignment tape	● Adjust X

Connection Diagram



Adjustment Procedure

1) Turn the Adjust X to the maximum RF Envelope level when the tracking control knob is at center click position.
2) If RF envelope output is maximized from the center click postion in right direction(clockwise), set the tracking control to the center and turn the Adjust X counterclockwise.
3) If in left direction(counterclockwise), turn it clockwise by same method.
4) In case of the 30μm, head will trace over a 60μm width track, readjust it so that RF Envelope output begins falling at the same angle when tracking control is turned either left or right.

Adjustment Diagram

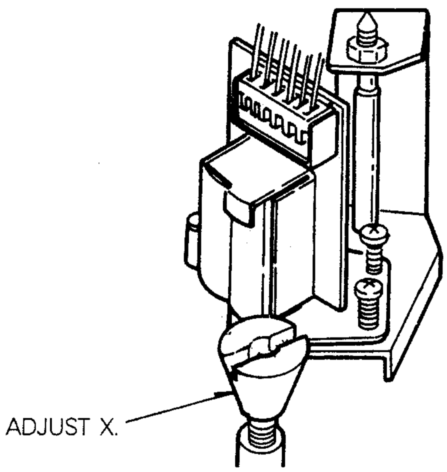


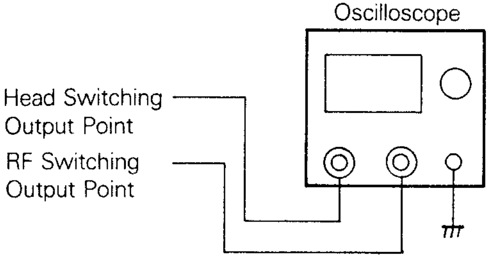
Fig. A-9

10. Adjustment after Replacing Drum Assembly(Video Heads)

Purpose: To suppress drift in the height relative to the Guide Roller and drift of the X-Value after replacing the drum.

Test equipment/jigs	Test equipment connection points	VCR state	Adjustment points
● Oscilloscope ● Post Height Adjusting Driver ● Alignment tape ● Blank tape ● M3 Nut Driver	Checking the flatness ● CH-1: PB RF Envelope ● CH-2: SW 30Hz ● Head Switching Output Point ● RF Envelope Output Point	● Run the blank tape ● Play an alignment tape	● Guide Rollers Precise Adjustment ● Switching point ● Tracking preset ● X-Value

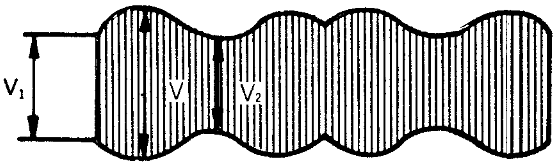
Connection Diagram



Checking/Adjustment Procedure

1) Run the blank tape, check and adjust whether the guide rollers is curling or creasing tape around the guide rollers.
2) Check the RF envelope output flatness and adjust the Guide Roller Height after playing an alignment tape.
3) Adjust the switching point.
4) Check that RF envelope output is maximum when the tracking control is at the center click position.
5) Adjust the Tracking Preset and adjust X-Value with Adjust X.

Waveform Diagram



V_1/V MAX $\geqslant 0.7$

V_2/V MAX $\geqslant 0.8$

RF ENVELOPE OUTPUT

Fig. A-10

11. Maintenance/Inspection Procedure

(1) Required Maintenance

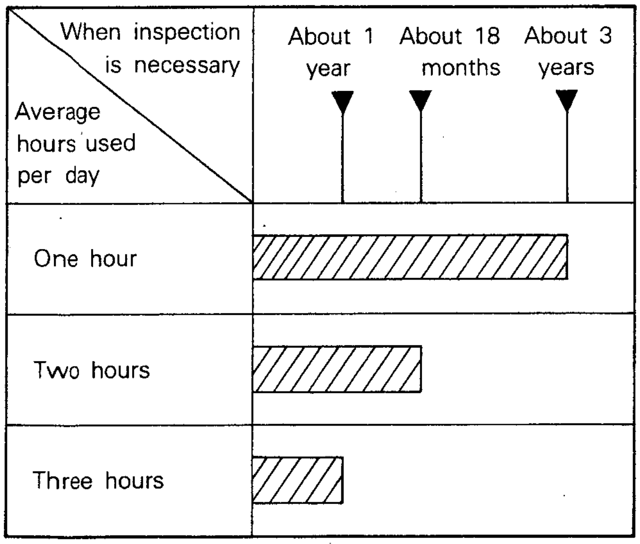
The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise, at tolerances of 1/1000mm, to ensure compatible with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure good picture, periodic inspection and maintenance, including replacement of worn-out parts and lubrication, are necessary.

(2) Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used.

But, in general home use, a good picture will be maintained if the inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1



(3) Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the need for lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Table 2

Symptom	Inspection Location
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, belt or flywheel belt
Vertical jitter, horizontal jitter	Dirt on video head or in tape transport system
Color beats	Dirt on full-erase head
Low volume or sound distorted	Dirt on audio/control head
Fast forward or rewind is not done or rotation is slow	Dirt on belt

(4) Supplies Reqaired for Inspection and Maintenance

(1) Greases Molykote EM-30LG(or equivalent)
(2) Alcohol(or freon)
(3) Cleaning Patches
(4) Also refer to Fig. D-5-1 on Page 4-12

5) Maintenance Procedures

5-1) Cleaning

(1) Cleaning video head

First use a cleaning tape. If dirt on head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with alcohol or freon to the point indicated. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically and make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

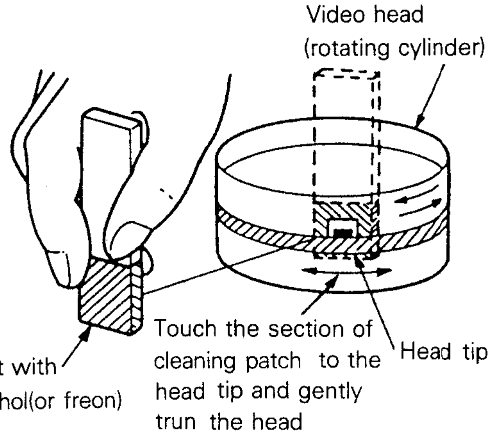
Thoroughly dry the head. Then test tape-running. If alcohol or freon remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Cleaning the tape transport system and drive, system, etc. wipe with cleaning patch wetted with alcohol or freon.

Note :

① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which run the tape.

② Make sure that during cleaning you do not touch the tape transport system with the tip of a screwdriver and no force is applied to the system that would cause deforming.


Video head
(rotating cylinder)
Touch the section of cleaning patch to the head tip and gently trun the head
Head tip
Coat with alcohol(or freon)

5-2) Greasing

(1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport of drive system. Wipe any excess and clean with cleaning patch wetted in alcohol or freon.

(2) Periodic greasing

Grease specified locations every 5,000 hours.

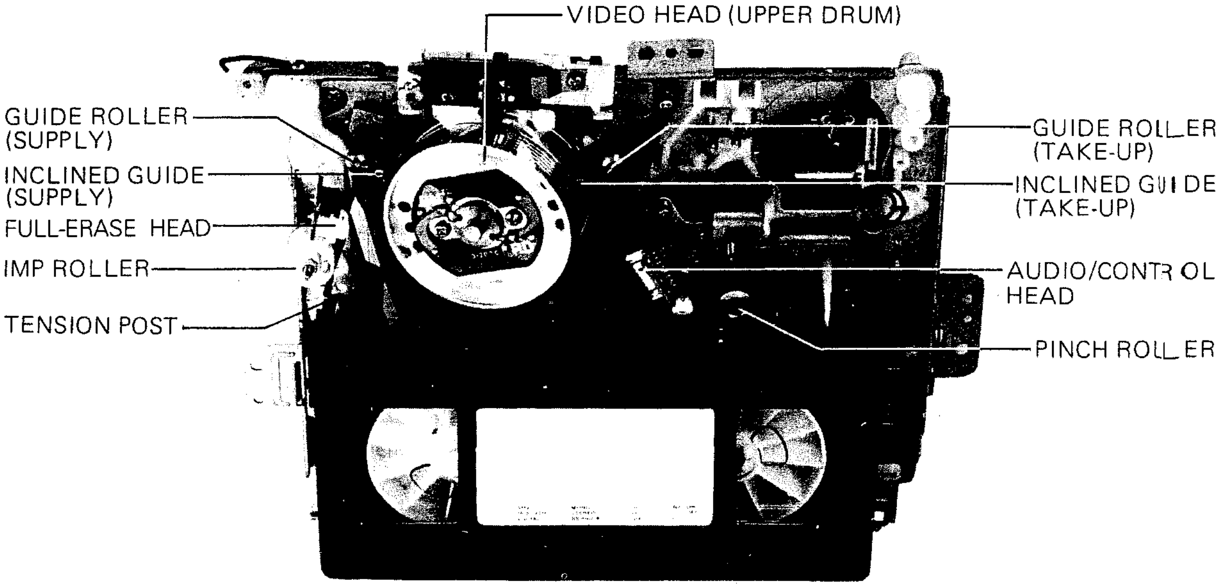

VIDEO HEAD (UPPER DRUM)
GUIDE ROLLER (SUPPLY)
INCLINED GUIDE (SUPPLY)
FULL-ERASE HEAD
IMP ROLLER
TENSION POST
GUIDE ROLLER (TAKE-UP)
INCLINED GUIDE (TAKE-UP)
AUDIO/CONTROL HEAD
PINCH ROLLER

Fig. A-11 Tape Transport System

Phenomenon	Inspection Location	Replacement	
Color beats	Dirt on full-erase head	○	①
Poor S/N, no color	Dirt on video head	○	②
Vertical jitter	Dirt on video head Dirt in tape transport system	○	③
Low volume, Sound distorted	Dirt on audio/control head	○	④
Tape does not run. Tape is slack.	Dirt on pintch roller	○	⑤

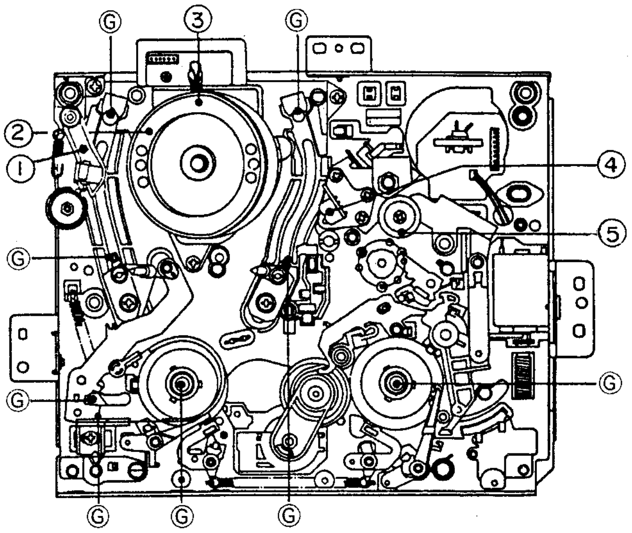


Fig. A-12 Top View of Mechanism

Phenomenon	Inspection Location	Replacement	
Do not fast forward or rewind, or rotation is slow	Dirt on reel belt	○	⑥
Tape does not run			
Slack tape			

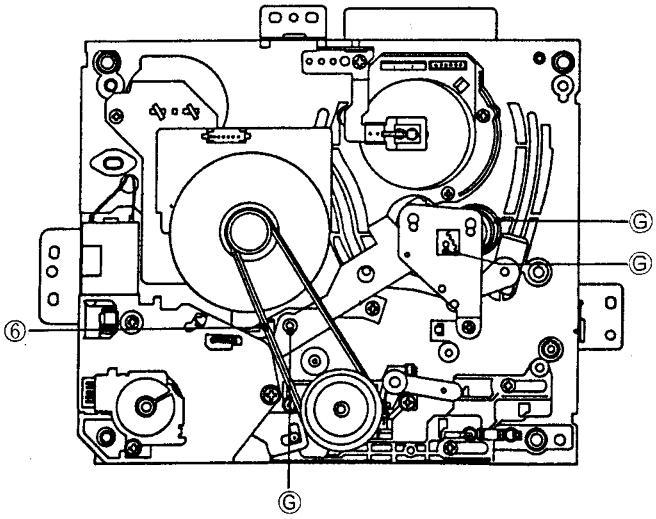


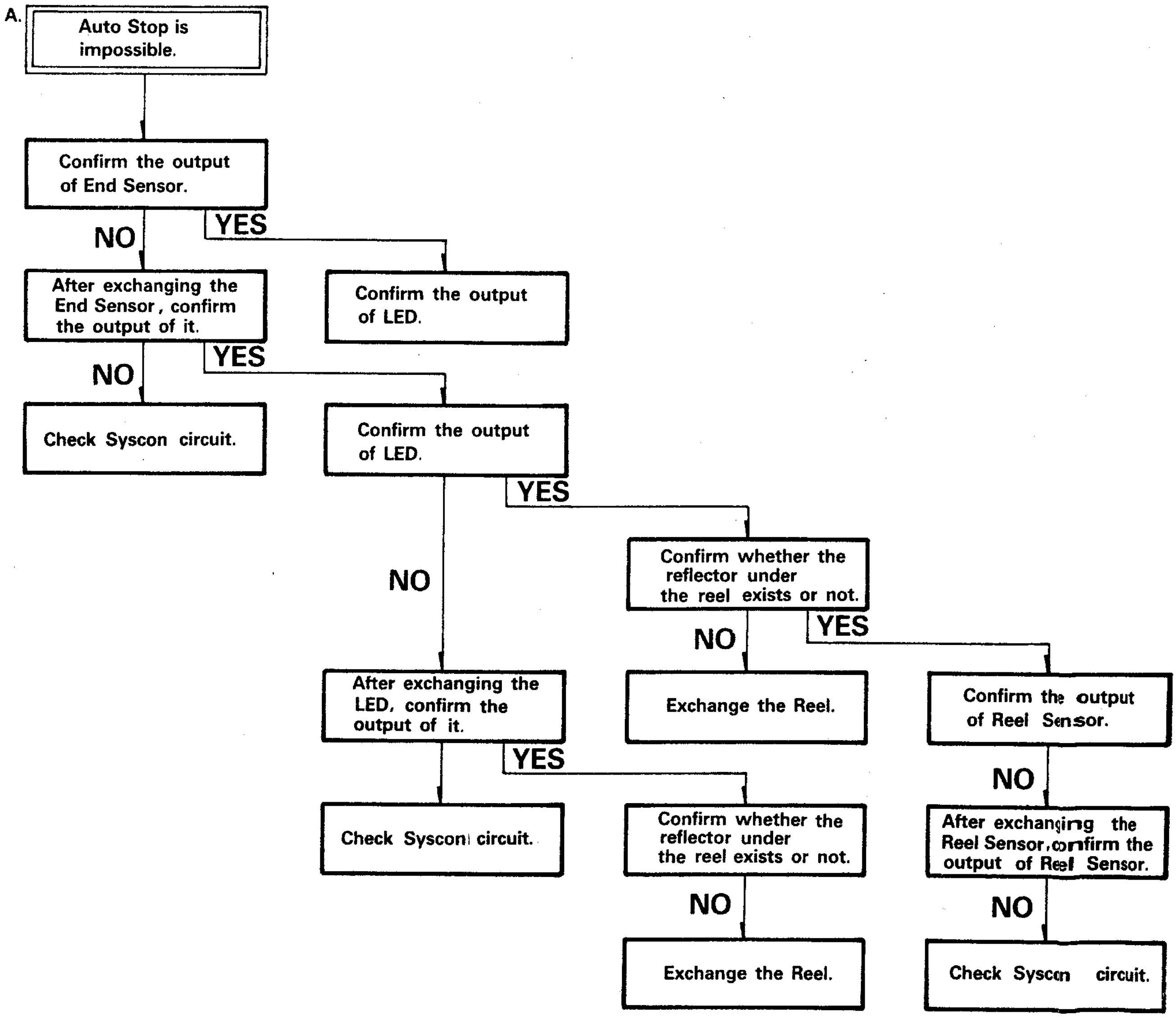
Fig. A-13 Bottom View of Mechanism

Note: If locations marked with ○ do not operate normally after cleaning, chock for wear and replace. See the EXPLODED VIEWS at the end of this manual as well as the above illustrations for the sections to be lubricated and greased.

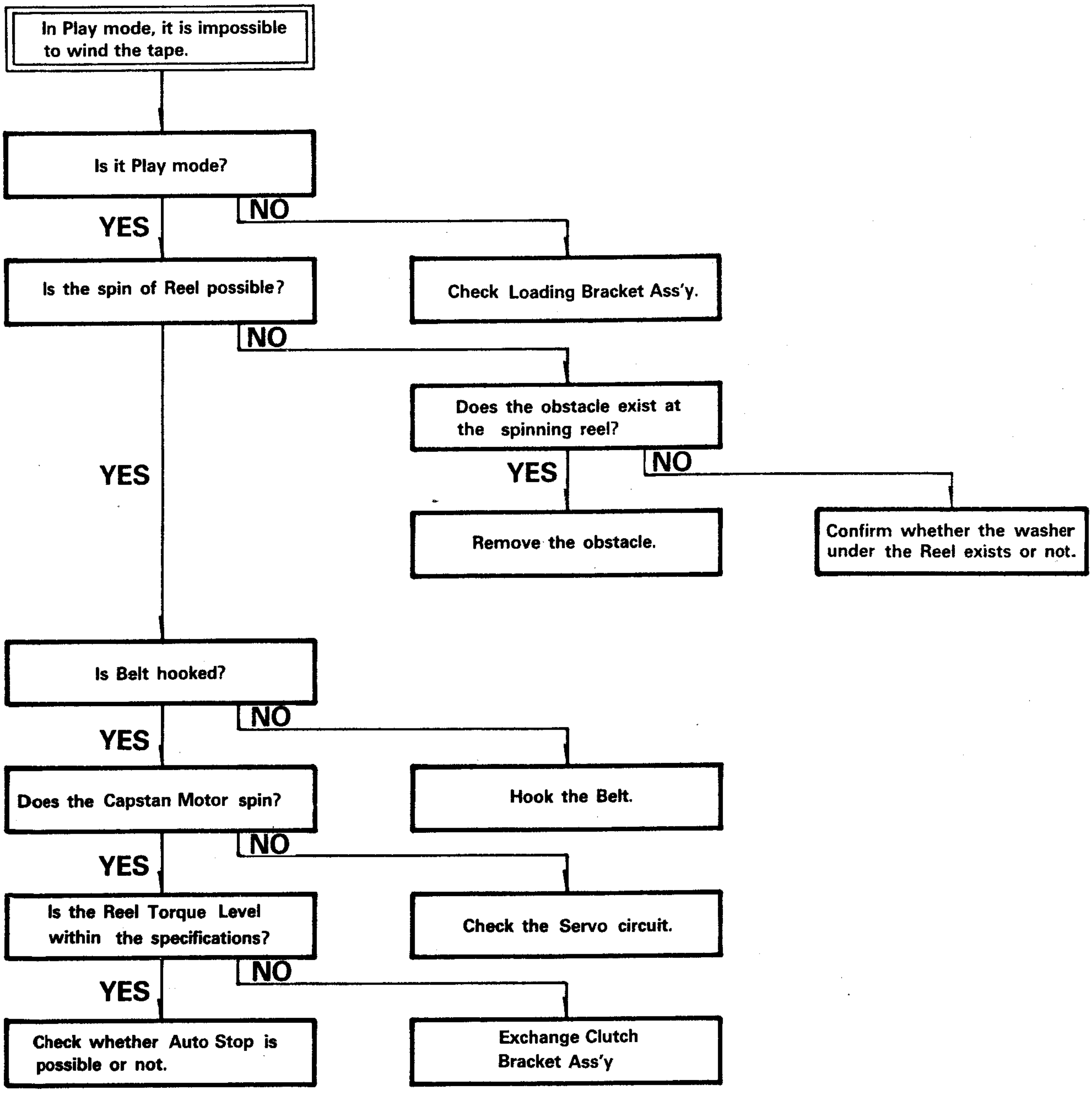
Ⓖ : Grease

MECHANISM TROUBLESHOOTING GUIDE

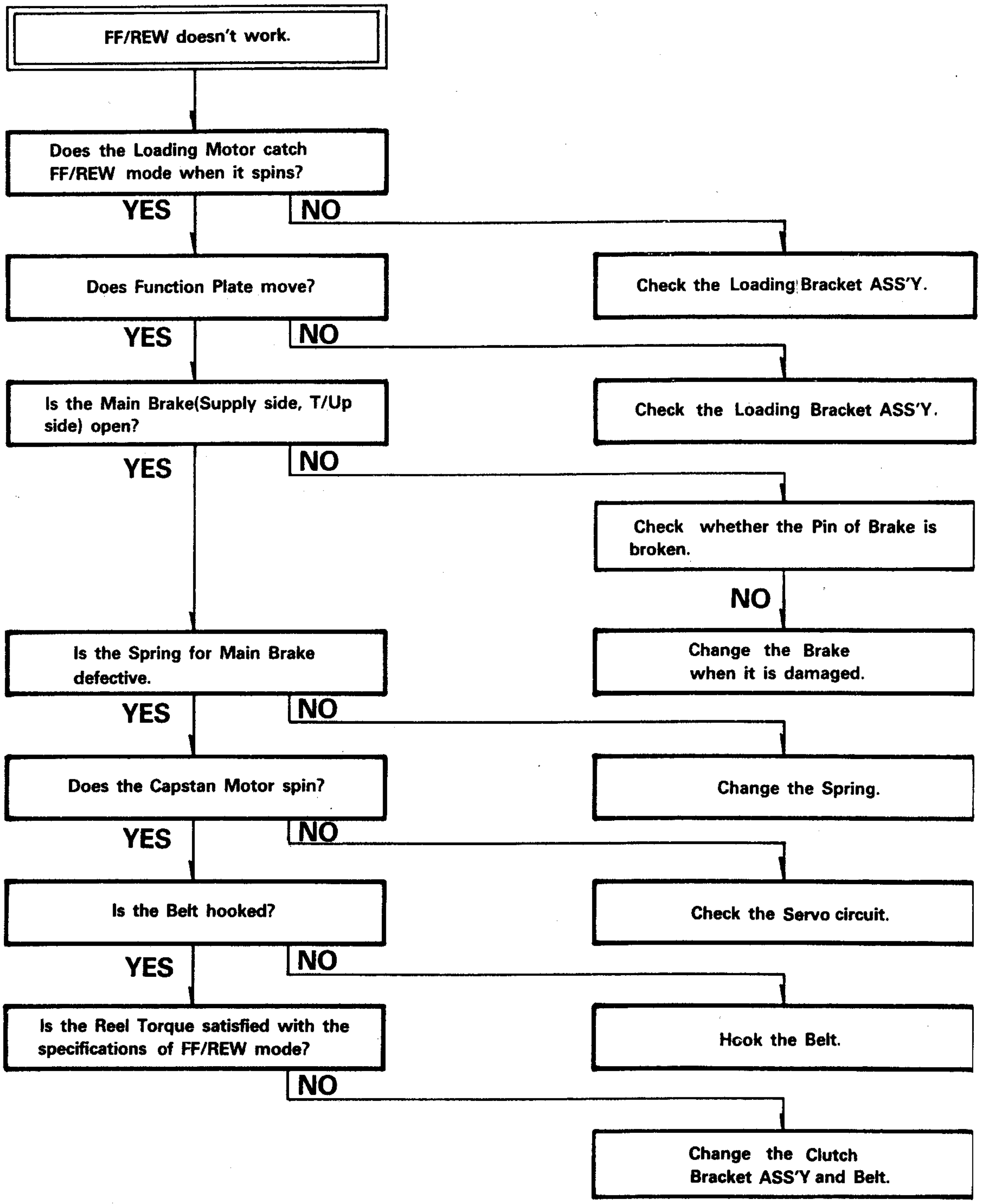
1. Deck Parts


A.
Auto Stop is impossible.
Confirm the output of End Sensor.
NO
YES
After exchanging the End Sensor, confirm the output of it.
Confirm the output of LED.
NO
YES
Check Syscon circuit.
Confirm the output of LED.
YES
NO
Confirm whether the reflector under the reel exists or not.
NO
YES
After exchanging the LED, confirm the output of it.
Exchange the Reel.
Confirm the output of Reel Sensor.
YES
NO
Check Syscon circuit.
Confirm whether the reflector under the reel exists or not.
After exchanging the Reel Sensor, confirm the output of Reel Sensor.
NO
NO
Exchange the Reel.
Check Syscon circuit.

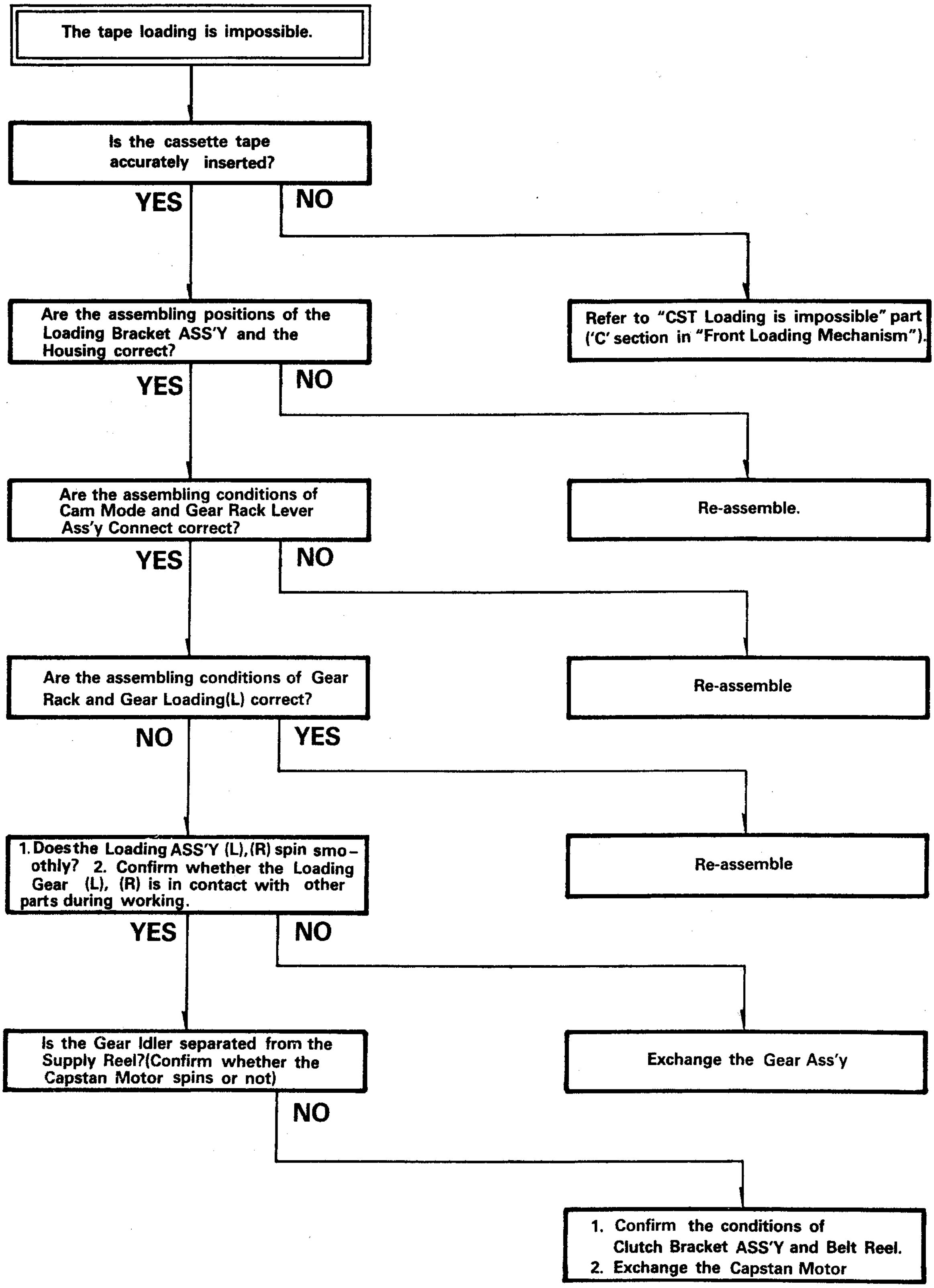
B.


In Play mode, it is impossible to wind the tape.
Is it Play mode?
YES
NO
Check Loading Bracket Ass'y.
Is the spin of Reel possible?
YES
NO
Does the obstacle exist at the spinning reel?
YES
NO
Remove the obstacle.
Confirm whether the washer under the Reel exists or not.
Is Belt hooked?
YES
NO
Hook the Belt.
Does the Capstan Motor spin?
YES
NO
Check the Servo circuit.
Is the Reel Torque Level within the specifications?
YES
NO
Check whether Auto Stop is possible or not.
Exchange Clutch Bracket Ass'y

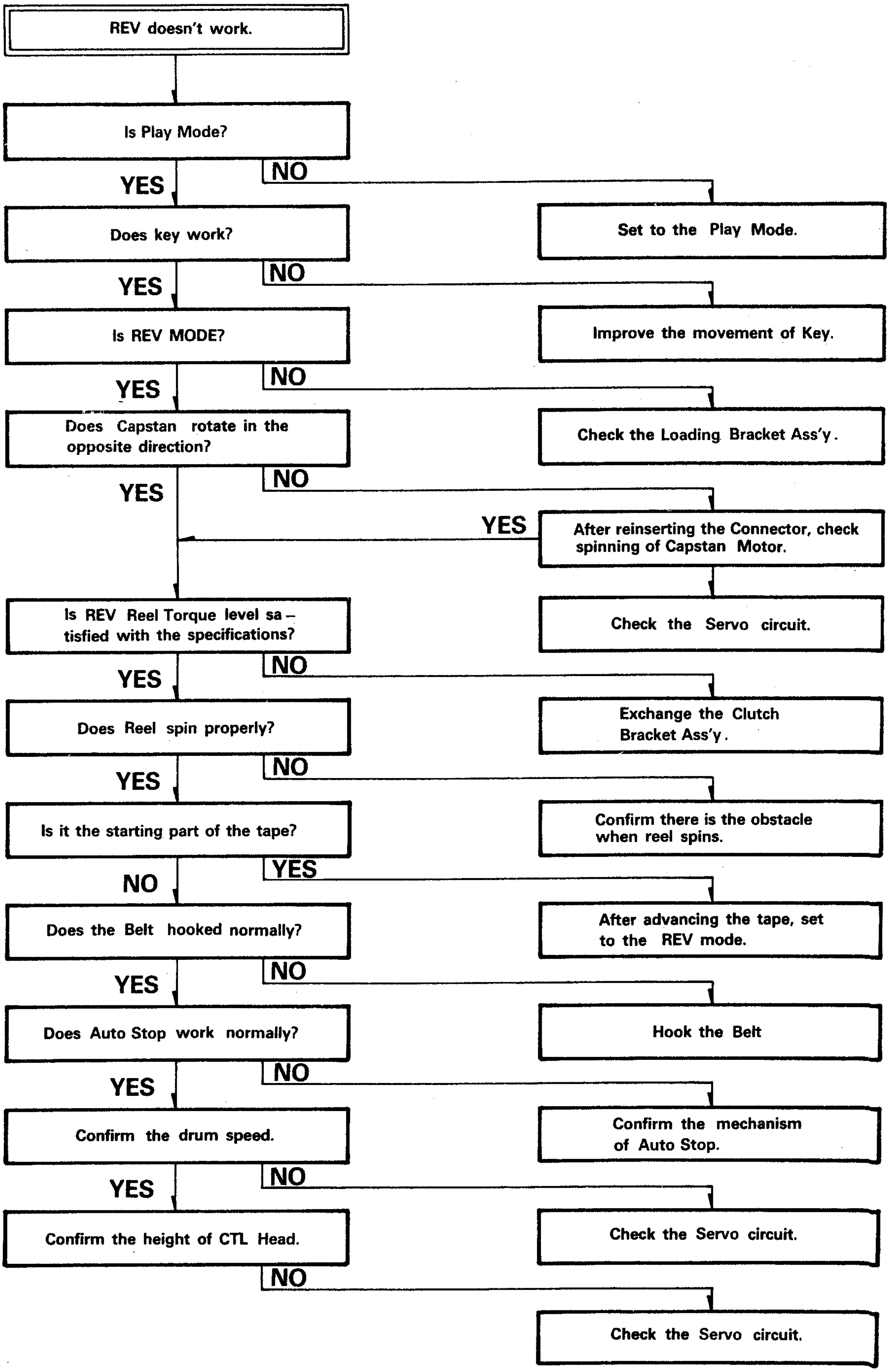
c.


FF/REW doesn't work.
Does the Loading Motor catch FF/REW mode when it spins?
YES
NO
Check the Loading Bracket ASS'Y.
Does Function Plate move?
YES
NO
Check the Loading Bracket ASS'Y.
Is the Main Brake(Supply side, T/Up side) open?
YES
NO
Check whether the Pin of Brake is broken.
NO
Change the Brake when it is damaged.
Is the Spring for Main Brake defective.
YES
NO
Change the Spring.
Does the Capstan Motor spin?
YES
NO
Check the Servo circuit.
Is the Belt hooked?
YES
NO
Hook the Belt.
Is the Reel Torque satisfied with the specifications of FF/REW mode?
NO
Change the Clutch Bracket ASS'Y and Belt.

D.

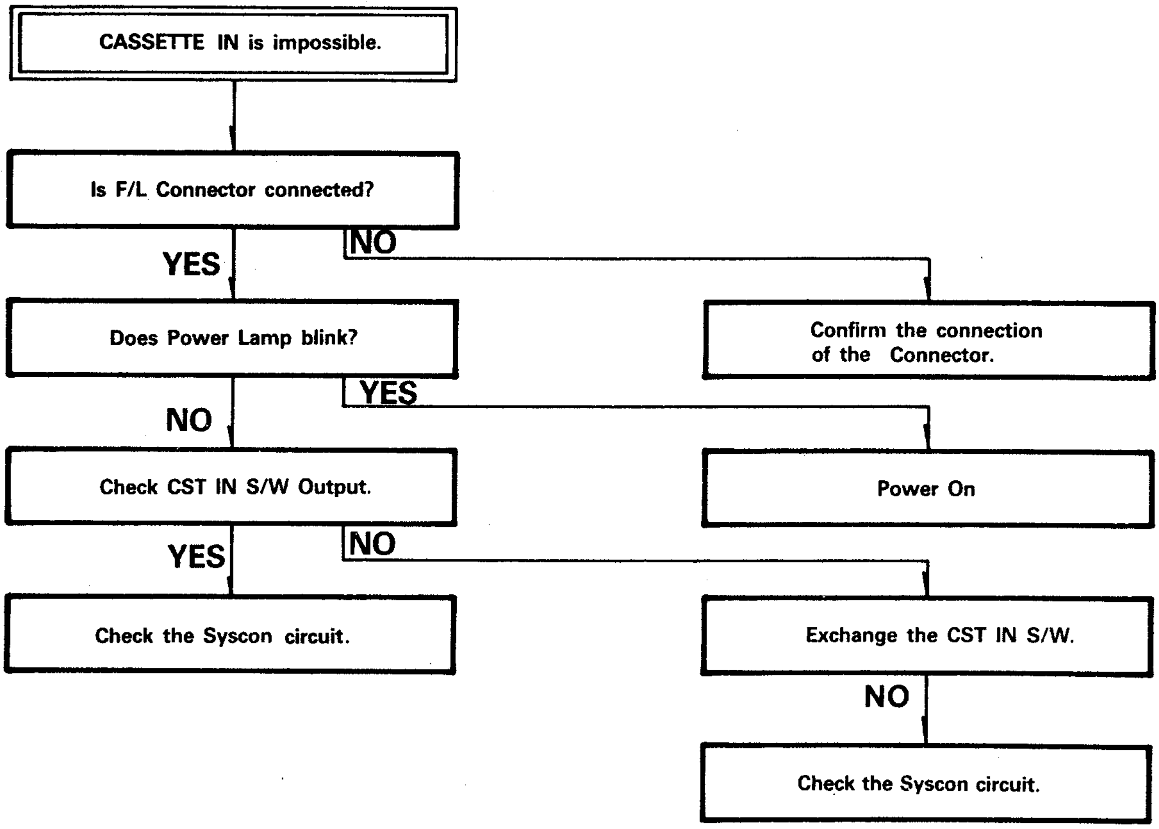

The tape loading is impossible.
Is the cassette tape accurately inserted?
YES
NO
Refer to "CST Loading is impossible" part ('C' section in "Front Loading Mechanism").
Are the assembling positions of the Loading Bracket ASS'Y and the Housing correct?
YES
NO
Re-assemble.
Are the assembling conditions of Cam Mode and Gear Rack Lever Ass'y Connect correct?
YES
NO
Re-assemble
Are the assembling conditions of Gear Rack and Gear Loading(L) correct?
NO
YES
Re-assemble
1. Does the Loading ASS'Y (L), (R) spin smoothly? 2. Confirm whether the Loading Gear (L), (R) is in contact with other parts during working.
YES
NO
Exchange the Gear Ass'y
Is the Gear Idler separated from the Supply Reel? (Confirm whether the Capstan Motor spins or not)
NO
1. Confirm the conditions of Clutch Bracket ASS'Y and Belt Reel.
2. Exchange the Capstan Motor

E.

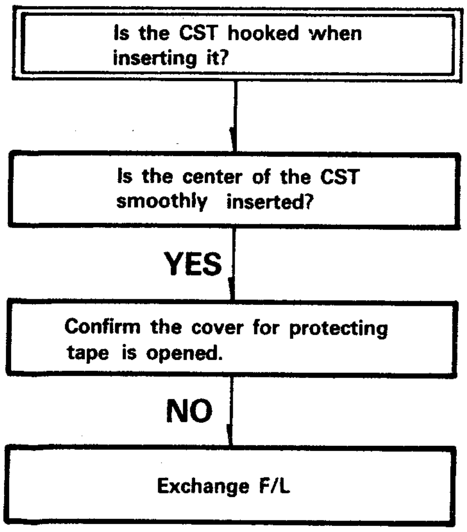

REV doesn't work.
Is Play Mode?
YES
NO
Set to the Play Mode.
Does key work?
YES
NO
Improve the movement of Key.
Is REV MODE?
YES
NO
Check the Loading Bracket Ass'y.
Does Capstan rotate in the opposite direction?
YES
NO
After reinserting the Connector, check spinning of Capstan Motor.
YES
Check the Servo circuit.
Is REV Reel Torque level satisfied with the specifications?
YES
NO
Exchange the Clutch Bracket Ass'y.
Does Reel spin properly?
YES
NO
Confirm there is the obstacle when reel spins.
Is it the starting part of the tape?
NO
YES
After advancing the tape, set to the REV mode.
Does the Belt hooked normally?
YES
NO
Hook the Belt
Does Auto Stop work normally?
YES
NO
Confirm the mechanism of Auto Stop.
Confirm the drum speed.
YES
NO
Check the Servo circuit.
Confirm the height of CTL Head.
NO
Check the Servo circuit.

2. Front Loading Mechanism Parts

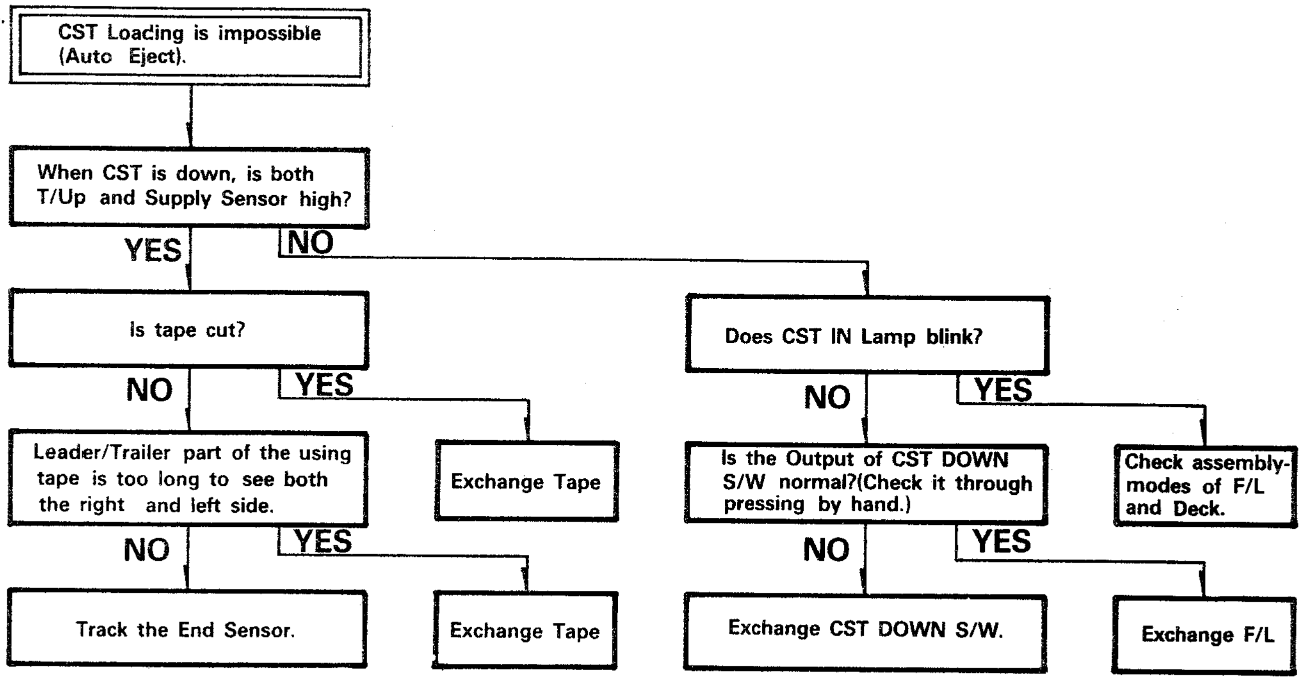
A.


CASSETTE IN is impossible.
Is F/L Connector connected?
YES
NO
Does Power Lamp blink?
Confirm the connection of the Connector.
NO
YES
Check CST IN S/W Output.
Power On
YES
NO
Check the Syscon circuit.
Exchange the CST IN S/W.
NO
Check the Syscon circuit.

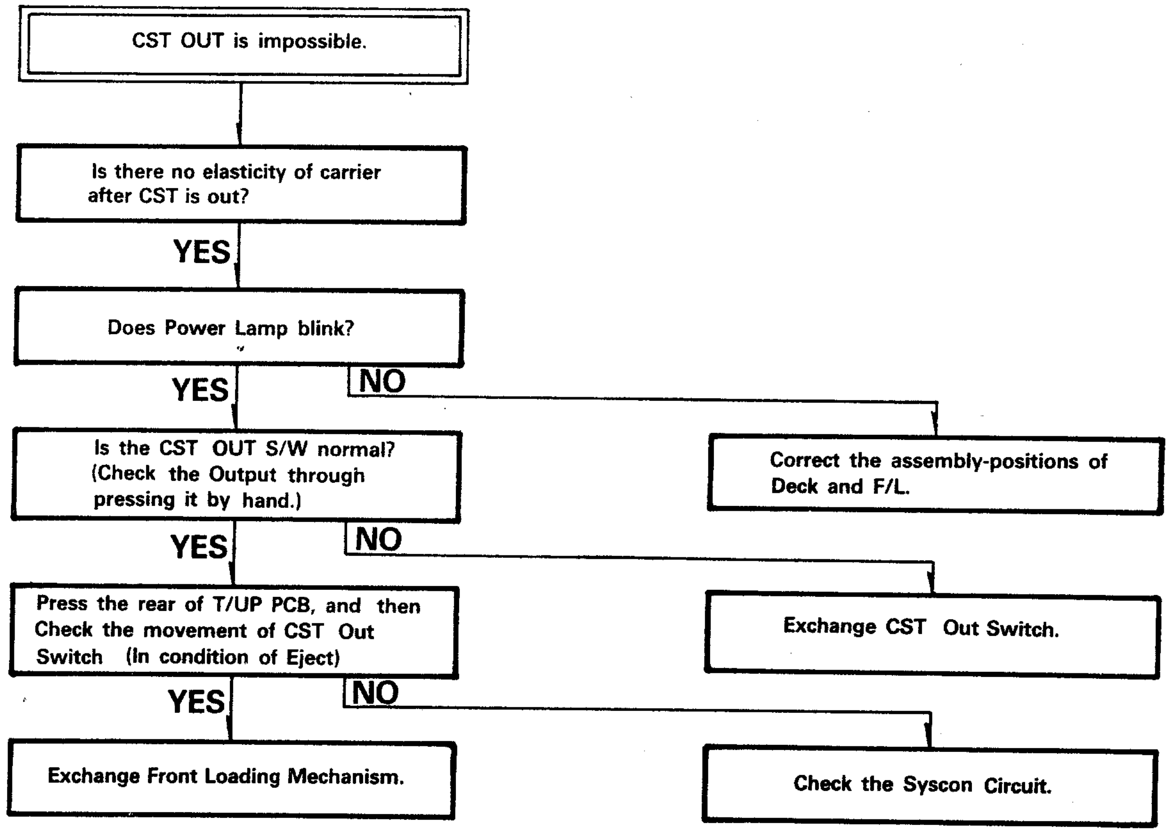
B.


Is the CST hooked when inserting it?
Is the center of the CST smoothly inserted?
YES
Confirm the cover for protecting tape is opened.
NO
Exchange F/L

C.


CST Loading is impossible (Auto Eject).
When CST is down, is both T/Up and Supply Sensor high?
YES
NO
Is tape cut?
NO
YES
Leader/Trailer part of the using tape is too long to see both the right and left side.
NO
YES
Track the End Sensor.
Exchange Tape
Exchange Tape
Does CST IN Lamp blink?
NO
YES
Is the Output of CST DOWN S/W normal?(Check it through pressing by hand.)
NO
YES
Exchange CST DOWN S/W.
Check assembly-modes of F/L and Deck.
Exchange F/L

D.

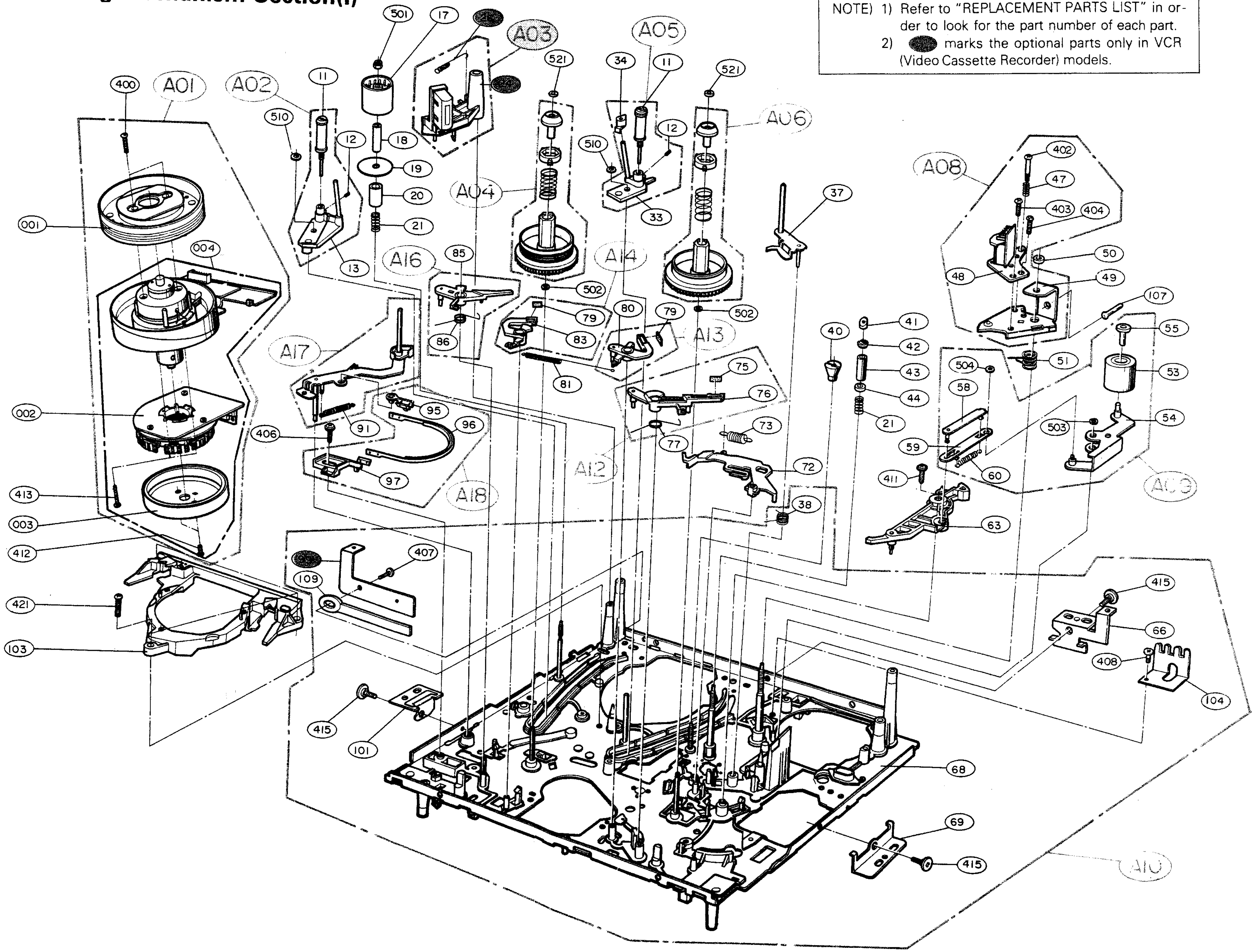

CST OUT is impossible.
Is there no elasticity of carrier after CST is out?
YES
Does Power Lamp blink?
YES
NO
Correct the assembly-positions of Deck and F/L.
Is the CST OUT S/W normal? (Check the Output through pressing it by hand.)
YES
NO
Exchange CST Out Switch.
Press the rear of T/UP PCB, and then Check the movement of CST Out Switch (In condition of Eject)
YES
NO
Exchange Front Loading Mechanism.
Check the Syscon Circuit.

MEMO

EXPLODED VIEWS

1. Moving Mechanism Section(I)

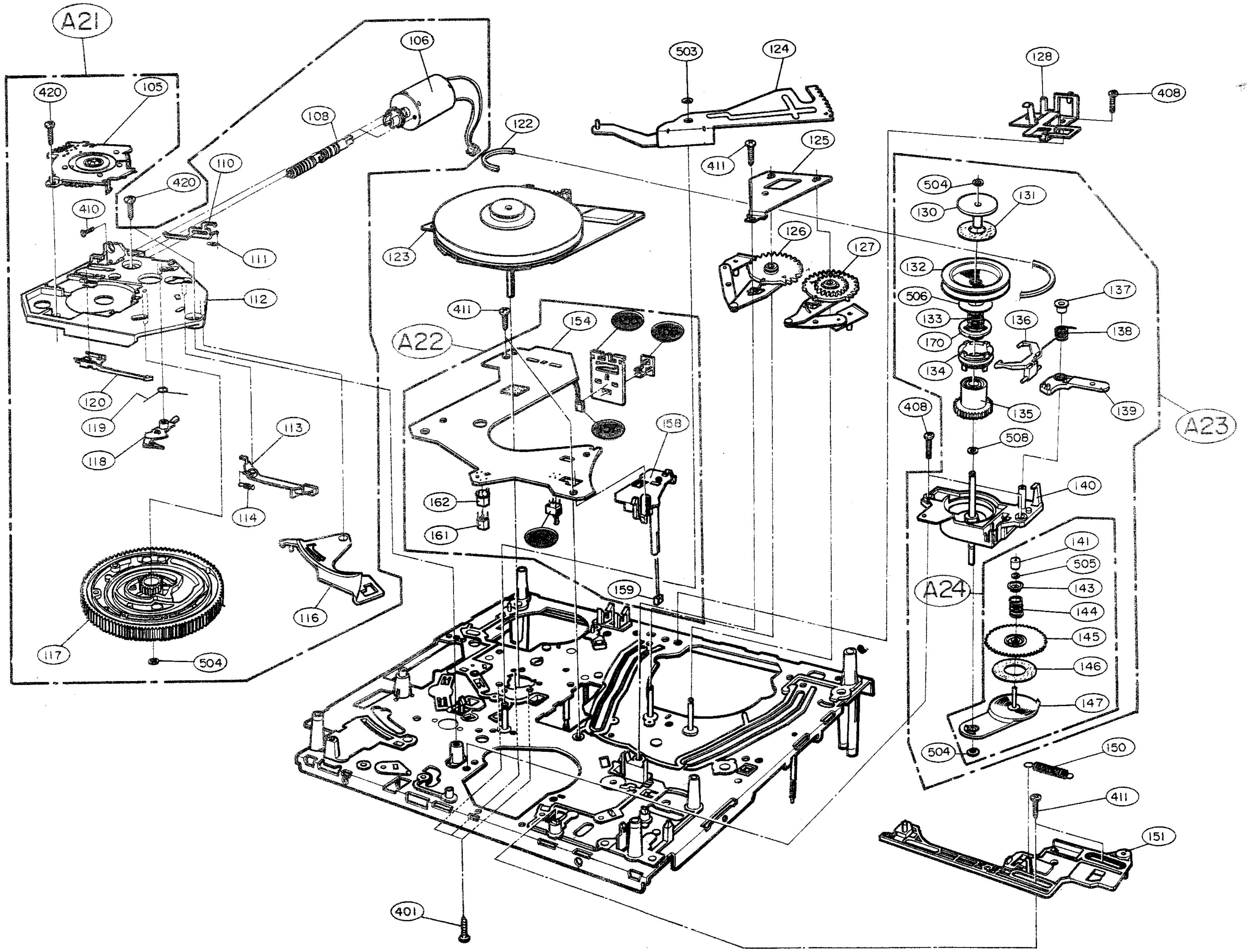
NOTE) 1) Refer to "REPLACEMENT PARTS LIST" in order to look for the part number of each part.
2) ● marks the optional parts only in VCR (Video Cassette Recorder) models.



400
A01
A02
510
11
12
18
19
20
21
13
501
17
A03
A05
521
34
11
12
510
33
A04
521
A06
A08
402
47
403
404
48
50
49
107
55
53
54
503
37
001
004
A16
85
502
A14
80
79
502
79
83
86
A13
41
42
43
44
21
40
504
58
59
60
51
411
63
A09
A17
95
96
91
406
97
A18
75
76
73
77
A12
72
38
81
002
413
003
412
421
103
109
407
415
101
415
66
408
104
68
69
415
A10
5
4
3
2
1
A
B
C
D
E
F
G
H

2. Moving Mechanism Section(II)

NOTE) 1) Refer to "REPLACEMENT PARTS LIST" in order to look for the part number of each part.
2) ● marks the optional parts only in VCP (Video Cassette Player) models.

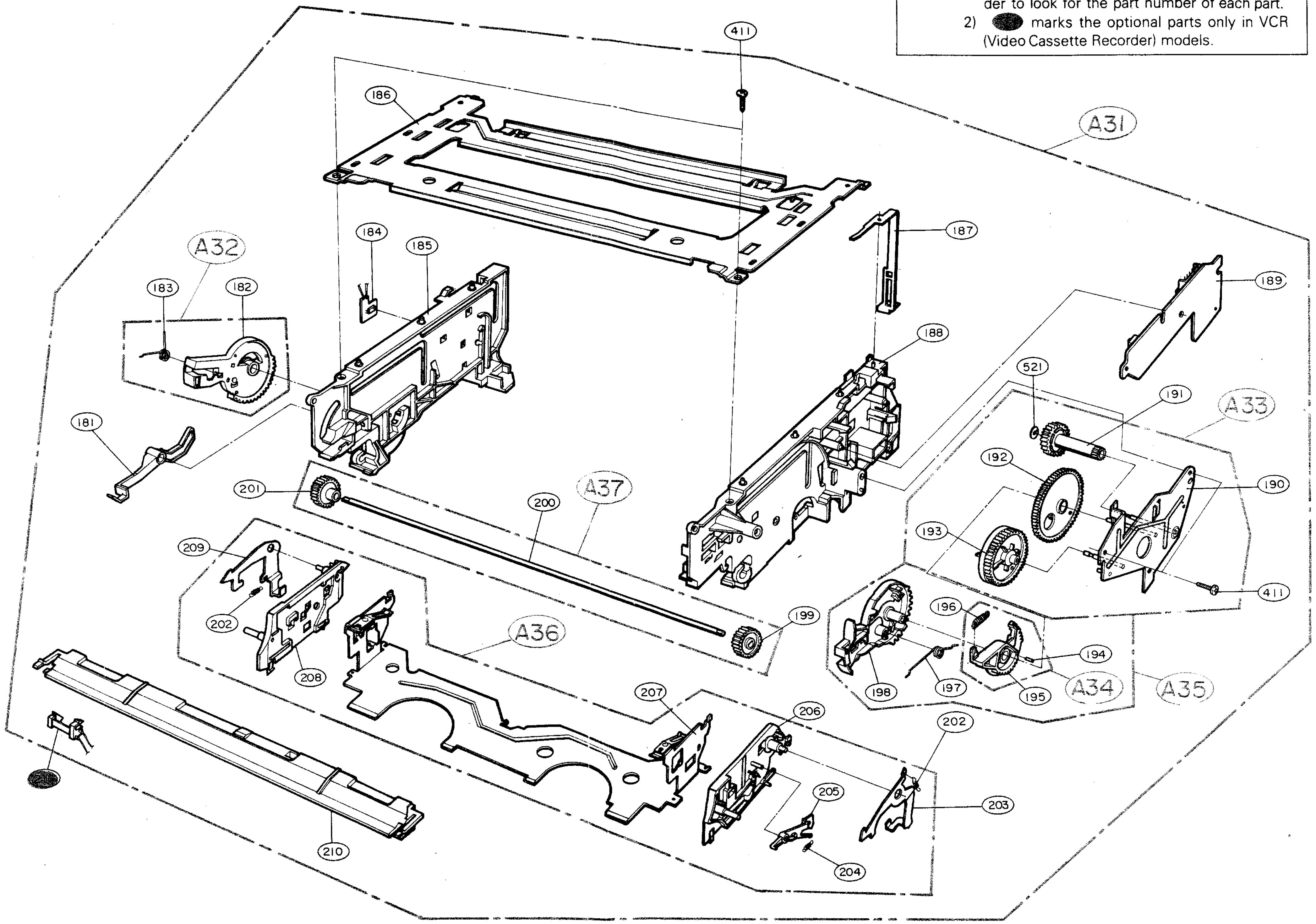

A21
420
105
106
108
110
420
410
111
112
122
123
411
A22
154
120
119
118
113
114
116
117
504
162
161
158
159
503
124
411
125
126
127
128
408
504
130
131
132
506
133
170
134
136
137
138
139
135
408
508
140
A23
141
505
143
A24
144
145
146
147
504
150
411
151
401

5
4
3
2
1

A B C D E F G H

3. Front Loading Mechanism Section

NOTE) 1) Refer to "REPLACEMENT PARTS LIST" in order to look for the part number of each part.
2) ● marks the optional parts only in VCR (Video Cassette Recorder) models.


411
186
A31
187
184
185
A32
183
182
189
188
521
191
A33
181
192
190
201
A37
200
193
411
209
196
199
202
A36
194
208
198
197
195
A34
A35
207
206
202
205
203
210
204
5
4
3
2
1
A
B
C
D
E
F
G
H

REPLACEMENT PARTS LIST

1. Mechanical Section

* NOTE:The blank spaces(□) refer to the "DIFFERENCE TABLE OF MECHANISM PARTS".

NSP : Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
ASSEMBLY PARTS SECTION						
		A00	□	DECK	ASSY D09-P2R(VM201-P2R)	
		A01	□	DRUM	ASSY (D09-PAL/2CH:SP ONLY)	
		A02	427-020E	POST	ASSY SLANT(L)	
		A03	225-160B	BASE	ASSY FE HEAD	
		A04	456E016C	REEL	ASSY NON-M/C	
		A05	427-021I	POST	ASSY SLANT(R)	
		A06	456E016A	REEL AY.		
		A08	□	BASE AY. AC HEAD		
		A09	386E121B	ARM	ASSY PINCH	
		A10	□	CHASSIS ASSY'	D-09	NSP
	OR	A10	□	CHASSIS ASSY'	ASSY D-09	NSP
		A12	338E044A	BRAKE AY.	SOFT T/UP	
		A13	338-041A	BRAKE AY.	MAIN TAKE UP	
		A14	338-039A	BRAKE AY.	MAIN SUPPLY	
		A16	338E037A	BRAKE AY.	S/O SUPPLY	
		A17	386-128B	ARM AY.	TENSION	
		A18	□	HOLDER AY.	TENSION	
		A21	□	BRACKET AY.	LOADING	
		A22	511-481D	PWB ASSY	REEL (D09)	
		A23	321-218A	BRACKET AY.	CLUTCH	
		A24	431-021A	IDLER AY.		
		A31	□	HOUSING.	F/L(D-09)	
		A32	435-128A	GEAR AY.	ARM(L)	
		A33	321-232A	BRACKET AY.	RIGHT	
		A34	435-169A	GEAR AY.	CUSHION	
		A35	435-132A	GEAR AY.	ARM(R)	
		A36	324-358A	HOLDER AY.	CASSETTE	NSP
		A37	435-126A	GEAR AY.	DRIVE	NSP
PARTS SECTION						
		001	□	DRUM	ASSY UPPER (PAL-2CH:SP ONLY)	
		002	414-065A	MOTOR AY.	DRUM(S)	
	OR	002	414-081A	MOTOR.DRUM	GVD-102(S)	
		003	414-065B	MOTOR AY.	DRUM(R)	
	OR	003	414-081B	MOTOR.DRUM(R)	GVD-102	
		004	□	DRUM	ASSY LOWER (D09-2CH)	
		011	434-041A	ROLLER AY.	GUIDE	
		012	SKE1822U	SCREW.SET	M3X4SCM3	
		013	225-118C	BASE	ASSY SLANT(L)	
		017	434-042B	ROLLER.IMP		
		018	378-010B	SLEEVE.P(1)		
		019	256-400A	PLATE.LIMITER		
		020	341-044A	BUSHING	P(1)	
		021	442E161A	SPRING	P14	
		024	225-123A	BASE.	F.E HEAD	
		025	523-040A	HEAD.	G.E.J ALPS	
		026	442-238A	SPRING	FE HEAD	

NSP : Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		033	225-120C	BASE	ASSY SLANT(R)	
		034	324-414B	HOLDER.SLANT		
		037	386-126B	ARM AY.T/UP		
		038	442-162B	SPRING.	T/UP	
		040	389-002A	ADJUST.X		
		041	276-024A	CAP. P(4)		
		042	389-003B	ADJUST	P(4)	
		043	378-009A	SLEEVE	P(4)	
		044	436-025A	FLANGE	P(4)	
		047	442-002D	SPRING		
	OR	047	442-125D	SPRING.AZIMUTH		
		048		HEAD SUB AY.	RPE	
		049	225-117A	BASE.A/C	HEAD	
		050	389-010A	ADJUSTER	AC HEAD	
		051	442E158A	SPRING.A/C HEAD		
		053	434-037D	ROLLER AY.	PINCH	
		054	386-122B	ARM	SUBASSY PINCH	
		055	276-018A	CAP ROLLER		
		058	386-124A	ARM AY.	SPRING	
		059	333-098A	LEVER.SPRING		
		060	442-160D	SPRING.PINCH		
		063	333E095A	LEVER AY.	CONNECT	
		066		BRACKET	MECH BACK D-09	
		068	313-017A	CHASSIS	OUTSERT	NSP
		069	321-235A	BRACKET.MECH.R		
		072	333E099A	LEVER.P	STOPPER	
		073	442E279A	SPRING.	R.STOPPER	
		075	472-020B	FELT.S/O	BRAKE	NSP
		076	338-043A	BRAKE.SOFT	TAKE UP	NSP
		077	442-168B	SPRING.TAKE UP	BRAKE	
		079	472-022A	FELT.MAIN	BRAKE	NSP
		080	338-042A	BRAKE.	MAIN T/UP	NSP
		081	442-202A	SPRING	M-BRAKE	
		083	338-040A	BRAKE.MAIN	SUPPLY	NSP
		085	338-038A	BRAKE.S/O	SUPPLY	NSP
		086	442-167C	SPRING.SUPPLY	BRAKE	
		091	442-166A	SPRING.ARM	TENSION	
		095	324-356A	HOLDER.	BAND(B)	
		096		BAND SUB AY.	TENSION	
		097	324-357A	HOLDER.	BAND(A)	
		099	321-280A	BRACKET.AMP		
		101	321-239A	BRACKET.MECH.L		
		103	225-115C	BASE	ASSY DRUM	
		104	321-380A	BRACKET	LUG	
		105	556-085B	SWITCH	MODE	
	OR	105	556-085A	SWITCH.MODE		
		106	414-051A	MOTOR AY.	LOADING	
		108	437-004A	WORM AY.		
		109	327-001A	CLAMP.WIRE		
		110	333-138A	LEVER AY.	Q.ACTUATOR	
		111	442-155A	SPRING.Q.	ACTUATOR	
		112	321-224A	BRACKET AY.	CAM	
		113		LEVER	ASSY CAPS. SOFT	

NSP : Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		114	442-156A	SPRING.CAPS	SOFT	
		116	333-135A	LEVER AY.B	FOLLOWER	
		117	374-003A	CAM.MODE		
		118	333-091A	LEVER.Q	BRAKE	
		119	442-157A	SPRING.Q.	BRAKE	
		120	334-025A	STOPPER.Q.	BRAKE	
		122	452E030A	BELT.REEL		
		123		MOTOR.CAPSTAN	U-15B	
		124	435E122A	GEAR AY.	RACK	
		125	321E222A	BRACKET.(L)		
		126	435E120A	GEAR AY.	LOAD(R)	
		127	435E118A	GEAR AY.	LOAD(L)	
		128	324-380A	HOLDER AY.	BRUSH	
		130	334-023A	STOPPER.	CLUTCH(A)	NSP
		131	472-018C	FELT.		NSP
		132	432-025A	PULLEY.(A)		
		133	442-150A	SPRING.CLUTCH	(A)	
		134	333-084A	LEVER.	CLUTCH(A)	
		135	435-075A	GEAR.CLUTCH	(A)	
		136	386-115A	ARM.(L)		
		137	334-024A	STOPPER.LEVER		
		138	442-151A	SPRING.ARM	(L)	
		139	333-085A	LEVER.	CONNECT(A)	
		140	321-219A	BRACKET SUB AY.	CLUTCH	
		141	431-024A	IDLER.STOPPER		NSP
		143	431-023A	IDLER.WASHER		NSP
		144	442-152A	SPRING.IDLER		NSP
		145	435-117A	GEAR.IDLER		NSP
		146	472-018B	FELT.		NSP
		147	431-022A	IDLER SUB AY.		NSP
		150	442E149A	SPRING.F.PLATE		
		151	256E357A	PLATE AY.	FUNCTION	
		154	503-481A	PCB.DECK	JUNCTION	NSP
		158	324-379A	HOLDER.LED		
		159	653-020B	LED	GL451	
		161	657-010A	SENSOR.OPTO	COUPLER SG-2BC	
		162	324-399A	HOLDER.SENSOR	(B)	
		170	256-492A	PLATE CLUTCH		
		181	465-014A	OPENER.DOOR		NSP
		182	435-129A	GEAR.ARM	(L)	NSP
		183	442-172A	SPRING.ARM	GEAR(L)	NSP
		184	511-393A	PCB AY.SUP	D-09 HOUSING	
		185	321-231B	BRACKET	BRACKET	NSP
		186	256-361A	PLATE.TOP		NSP
		187	256-399A	PLATE.GROUND		NSP
		188	321-230B	BRACKET	BRACKET	NSP
		189	511-392A	PCB AY.T/UP	D-09 HOUSING	
		190	321-233A	BRACKET SUB AY.	RIGHT	NSP
		191	435-136A	GEAR.WORM		NSP
		192	435-130A	GEAR.IDLER		NSP
		193	435-131A	GEAR.CONNECT		NSP
		194	356-101A	PIN.CUSHION		NSP
		195	435-135A	GEAR.CUSHION		NSP

NSP : Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	
		196	442-174A	SPRING,CUSHION		NSP
		197	442-173A	SPRING,ARM	GEAR(R)	NSP
		198	435-134A	GEAR,ARM	(R)	NSP
		199	435-127A	GEAR DRIVE(R)		NSP
		200	423-190A	SHAFT,DRIVE		NSP
		201	435-142A	GEAR,DRIVE(L)		NSP
		202	442-169A	SPRING,CASSETTE	PROTECT	NSP
		202	442-169A	SPRING,CASSETTE	PROTECT	NSP
		203	386-130A	ARM,CASSETTE	PROTECT(R)	NSP
		204	442-170A	SPRING,LID	OPENER	NSP
		205	465-013A	OPENER,LID		NSP
		206	321-227B	BRACKET	BRACKET	NSP
		207	324-360A	HOLDER SUB AY.	CASSETTE	NSP
		208	321-229B	BRACKET	BRACKET	NSP
		209	386-131A	ARM,CST	PROTECT(L)	NSP
		210	384-028A	GUIDE,CST		NSP
		211	556-048A	SWITCH,SAFTY	MSW1456NBKU	
				SCREWS		
		400	MQP1836J	SCREW	PS+3X8 W/PW6	
		401	MPK1522J	SCREW	MPK+- M2.6X4	
		402	353-021D	SCREW,SPECIAL		
		403	MPK1836J	SCREW	PS+,-3X8 FZMY	
		404	353-048C	SCREW,CONE POINT	3X10	
		406	353-051B	SCREW,SPECIAL		
		407	ZWQ1826J	SCREW,BRASSIER	ST+3X5	
		408	MBC1836J	SCREW,BIND HEAD	M3X8	
		410	MPC1826J	SCREW	MPC +3X5	
		411	353-046B	SCREW,SPECIAL	(3X8 FZMY)	
		412	MQX1830J	SCREW	PS+3X6 FZMY	
		413	MQP1543J	SCREW	PS+2.6X14 W/PW	
		415	353-062A	SCREW,STEP		
		420	353-046D	SCREW,SPECIAL	(3X12 FZMY)	
		421	MQX1839J	SCREW	PS+3X10 FZMY	
		422	MQX1836J	SCREW	PS+3X8 FZMY	
OR		422	MQX1839J	SCREW	PS+3X10 FZMY	
				NUT, WASHER		
		501	352-019A	NUT,	NYLON M3	
		502	354-027A	WASHER,P.S		
		503	354-020F	WASHER,STOPPER		
		504	354-020D	WASHER,STOPPER		
		505	354-027E	WASHER	TEFLON	
		506	354-069B	WASHER	TEFLON	
		508	354-027D	WASHER,P,S		
		510	354-050C	WASHER,STOPPER		
		521	354-033A	WASHER,STOPPER		

2. Difference Table of Mechanism Parts

* VCR(Video Cassette Recorder)

DECK ASSY PART NO. / REF. NO.	412G047A	412G047B	412G047C	412G047D	412G047E	412G047F	DESCRIPTION	REMARKS
A01	413E133A	413E133B	413E133A	413E133A	413E140A	413E133B	DRUM ASSY	
A08	225-159E	225-159E	225-159H	225-159J	225-159J	225-159H	BASE ASSY A/C HEAD	
A10	311E003G	311E003G	311E003G	311E003G	311E003C	311E003G	CHASSIS ASSY D-09	NSP
OR	311E003F	311E003F	311E003F	311E003F	311E003E	311E003F		
A18	324-355A	324-355B	324-355A	324-355B	324-355B	324-355A	HOLDER AY TENSION	
A21	321-223A	321-223A	321-223A	321-223A	321-223C	321-223A	BRACKET ASSY LOADING	
A31	219-010B	219-010B	219-010B	219-015B	219-010B	219-010B	HOUSING F/L(D-09)	
001	413E137A	413E137B	413E137A	413E137A	413E199A	413E137A	DRUM ASSY UPPER	
004	413E134A	413E134A	413E134A	413E134A	413E146A	413E134A	DRUM ASSY LOWER	
048	523-051D	523-051D	523-051G	523-051G	523-051G	523-051G	HEAD SUB ASSY RPE	
066	321-389A	321-389A	321-389A	321-389A	321-378A	321-389A	BRACKET MECH BACK	
096	328-033A	328-033B	328-033A	328-033B	328-033B	328-033A	BAND SUB AY TENTION	
113	333-103A	333-103A	333-103A	333-103A	333-103C	333-103A	LEVER ASSY CAPS BRAKE	
123	414-083A	414-083A	414-083A	414-083A	414-101A OR 414-116A	414-083A	MOTOR CAPSTAN	
APPLICATION MODEL:	1290P/91P/95P 1296I/96W 1293S/97S/98S 1890P/1891P/1891I	1290I	1291PQ/93PQ/95PQ 1291L/96L 1296IQ	1900P /10P	3000P	1290IQ		

GoldStar

P/N 494-001E

1990. Printed in Korea

SECTION 5
REPLACEMENT PARTS LIST

GoldStar

VHS PAL VIDEO CASSETTE RECORDER

SERVICE MANUAL

CONTENTS

CABINET & MAIN FRAME SECTION
PACKING ACCESSORY SECTION
REMOTE CONTROL SECTION
ELECTRICAL SECTION

MODEL:GSE-1900P

GS **GoldStar**

CONTETNS

REPLACEMENT PARTS LIST 5-3

- Cabinet & Mainframe Section 5-3
- Packing Accessory Section 5-4
- Remote Control Section 5-4
- Electrical Section 5-5

REPLACEMENT PARTS LIST

• Cabinet & Mainframe Section

NSP : Not Service Part

ASSEMBLY PARTS SECTION

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		A43	258-435D	PANEL	ASSY FRONT	
		A44	235-939A	BOARD ASSY	POWER	
		A45	235-908B	BOARD ASSY	PRE-AMP	
		A46	235-940E	BOARD ASSY	MAIN(SLD.W/O TUNER)	

PARTS SECTION

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		250	217E247C	CASE	TOP	
		260	315E191A	FRAME	MAIN	NSP
		261	327-013A	CLAMP	CORD	NSP
		262	323-134A	BRACKET	CASING	
		263	323-163A	BRACKET	CASING	
		265	477-033A	RUBBER	FOOT	NSP
		267	243-701V	LABEL	MAIN	NSP
		268	447-018L	CUSHION	TOP	NSP
		271	324-064A	HOLDER.LED		
		275	324-546A	HOLDER	DIGITRON	
		276	273-075A	KNOB	SLIDE	
		278	256-345A	PCATE TRACKING		NSP
		280	258-328A	PANEL	FRONT	NSP
		281	221-577F	COVER	PANEL	NSP
		282	221-430A	COVER	DOOR	
		283	226-037D	DOOR	CASSETTE	
		284	442-323A	SPRING	CST DOOR	
		286	236-238A	WINDOW	FILTER	NSP
		289	236-233A	WINDOW	LED(POWER)	NSP
		291	275-357N	BUTTON	FUNCTION (B)	NSP
		292	275-356A	BUTTON	FUNCTION(A)	NSP
		293	275-357P	BUTTON	FUNCTION (B)	NSP
		294	324-232A	HOLDER,	DOOR	
		297	256-690B	PLATE	FRONT(GOLD)	NSP
		298	256-697J	PLATE	TIMER (A)	NSP
		299	256-698A	PLATE	TIMER (B)	NSP
		300	681-035A	CORD	POWER PAL W/STOPPER	
		301	321-388B	BRACKET	HEAT SINK	
*		303	221-144B	COVER	INSULATION	
		304	221-407A	COVER	FUSE	
		310	217-274A	CASE	PRE-AMP	
		311	221-405A	COVER	PRE-AMP-A	
		312	221-406A	COVER	PRE-AMP-B	
		320	258-369A	PANEL	ASSY DISTRIBUTOR	
		330	221E362A	COVER	BOTTOM	
		331	447-018B	CUSHION.SPECIAL		NSP

SCREWS

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		449	1MPC0302418	PAN HEAD MACHINE SCREW +	D 3.0 L 8.0 MSWR3/FZY	NSP
		450	353-085A	SCREW	DECORATION	
		451	353-046C	SCREW.SPECIAL	(3X10 FZMY)	
		452	353-051A	SCREW.SPECIAL		
		453	1TRL0302418	BRAIZER HEAD TA SCREW + 2 CUT	D 3.0 L 8.0 MSWR3/FZY	
		454	1TRL0402418	BRAIZER HEAD TA SCREW + 2 CUT	D 4.0 L 8.0 MSWR3/FZY	

• Packing Accessory Section

NSP : Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		801	480E350Y	INSTRUCTION ASSY		
		802	288E057A	BOX	CARTON	
		803	283E116A	PACKING	E.PS	
		804	292-002K	BAG	SOFT	NSP
		810	861-505B	CABLE SET ASSY	RF-CABLE,ASSY,PAL	

• Remote Control Section

NSP : Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		900	597-039Q	REMOTE CONTROL	ASSY	
		901	256-694P	PLATE	TOP R/C	NSP
		902	221-283A	COVER TOP	REMOTE CONTROL	NSP
		903	511-983A	PWB ASSY	REMOCON FOR S2	NSP
		904	556-100R	SWITCH	CONDUCTIVE,RUBBER	NSP
		906	236-151A	WINDOW FILTER		NSP
		907	221-284A	COVER BOTTOM,	REMOTE CONTROL	NSP
		908	221-285A	COVER BATTERY	REMOTE CONTROL	
		909	442-134A	SPRING,BATTERY	R/C	NSP
		910	442-195B	SPRING BATTERY	(B)	NSP
		911	442-201B	SPRING BATTEY	(C)	NSP

• Electrical Section

CAUTION : The * marks in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the SAFETY PRECAUTIONS and SERVICING PRECAUTIONS in this manual. Do not degrade the safety of the unit throgh improper servicing.

Tolerance

Symbol	C	J	K	M	N	Z	P	A
%	±2	±5	±10	±20	±30	+80 −20	+100 −10	+100 −10

CC, CJ, CK : Capacitor, Ceramic
CE : Capacitor, Electrolytic
CQ : Capacitor, Polyester

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		CAPACITOR		
		CL101	624-018A	DE7100 472P
		C001	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C002	0CN2230H948	0.022M 25V Z F TA26
		C003	0CN3310K518	330P 50V K B TA26
		C004	0CC1200K415	12P 50V J NPO TS
		C005	0CN1030F678	0.01M 16V M Y TA26
		C006	0CN1030F678	0.01M 16V M Y TA26
		C007	0CC3300K415	33P 50V J NPO TP
		C008	0CN1030F678	0.01M 16V M Y TA26
		C009	0CC0300K015	3P 50V C NPO TS
		C010	0CN1030F678	0.01M 16V M Y TA26
		C011	0CN2230H948	0.022M 25V Z F TA26
		C012	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C013	0CN2230H948	0.022M 25V Z F TA26
		C015	0CN2230H948	0.022M 25V Z F TA26
		C016	0CC2200K405	22P 50V J SL TP
		C017	0CE1054K638	1.0M SRA/SS50V M FM5 TP(5)
		C018	0CE1054K638	1.0M SRA/SS50V M FM5 TP(5)
		C019	0CC2200K405	22P 50V J SL TP
		C020	0CN2230H948	0.022M 25V Z F TA26
		C021	0CE1054K638	1.0M SRA/SS50V M FM5 TP(5)
		C022	0CN2230H948	0.022M 25V Z F TA26
		C023	0CN2230H948	0.022M 25V Z F TA26
		C024	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C025	0CN2230H948	0.022M 25V Z F TA26
*		C101	0CK2230K940	0.022M 50V Z F S
		C102	0CK2230K940	0.022M 50V Z F S
		C103	624-025A	4700UF-35V
		C104	0CE2285F610	2200M SR 16V M FL
		C105	0CE4766F630	47M SMS 16V M FM5
		C106	0CE4766F630	47M SMS 16V M FM5
		C107	0CE4766F630	47M SMS 16V M FM5
		C108	0CE4766F630	47M SMS 16V M FM5
		C109	0CN1030F678	0.01M 16V M Y TA26
		C110	0CE4766F630	47M SMS 16V M FM5
		C111	0CE4766F630	47M SMS 16V M FM5
		C112	0CN1030F678	0.01M 16V M Y TA26
		C114	0CE4766F630	47M SMS 16V M FM5
		C115	0CE4766F630	47M SMS 16V M FM5
		C116	0CE1064K630	10M SRA 50V M FM5
		C117	0CE4766K630	47M SMS 50V M FM5
		C119	0CK2230K940	0.022M 50V Z F S
		C120	0CK2230K940	0.022M 50V Z F S
		C121	0CE1076L610	100M SMS 63V M FM5
		C122	0CK2230K940	0.022M 50V Z F S
		C123	0CK2230K940	0.022M 50V Z F S
		C124	0CE1076L610	100M SMS 63V M FM5
		C201	0CE4766F638	47M SMS 16V M FM5 TP5
		C202	0CQ2231N409	0.022U 100V J POLY TP
		C203	0CQ8231N409	0.082U 100V J POLY TP
		C204	0CQ2231N409	0.022U 100V J POLY TP
		C205	0CQ2231N409	0.022U 100V J POLY TP
		C206	0CQ4731N409	0.047U 100V J POLY TP
		C207	0CQ4731N409	0.047U 100V J POLY TP
		C208	0CQ1021N409	0.001U 100V J POLY TP
		C209	0CE1051K636	1.0U SM 50V M FM5 BP TP(D)
		C210	0CQ4731N409	0.047U 100V J POLY TP
		C211	0CE2266F638	22M SMS 16V M FM5 TP5
		C212	0CE1066H638	10M SMS 25V M FM5 TP
		C213	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C214	0CE1051K636	1.0U SM 50V M FM5 BP TP(D)
		C215	0CQ1041N409	0.1U 100V J POLY TP
		C216	0CQ6831N409	0.068U 100V J POLY TP
		C217	0CE2256K638	2.2M SMS 50V M FM5 TP(5)
		C220	0CQ1031N409	0.01U 100V J POLY TP
		C221	0CQ1021N409	0.001U 100V J POLY TP
		C222	0CE1066H638	10M SMS 25V M FM5 TP
		C223	0CQ1021N409	0.001U 100V J POLY TP
		C224	0CQ1021N409	0.001U 100V J POLY TP
		C225	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C226	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C227	0CQ3321N409	0.0033U 100V J POLY TP
		C228	0CE1066H638	10M SMS 25V M FM5 TP
		C229	0CQ2221N409	0.0022U 100V J POLY TP
		C230	0CQ2221N409	0.0022U 100V J POLY TP
		C231	0CE1066H638	10M SMS 25V M FM5 TP
		C232	0CE2266F638	22M SMS 16V M FM5 TP5
		C233	0CN2210K518	220P 50V K B TA26
		C235	0CN1010K518	100P 50V K B TA26
		C236	0CE1066H638	10M SMS 25V M FM5 TP
		C237	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C238	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C239	0CE2256K638	2.2M SMS 50V M FM5 TP(5)

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C240	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C241	0CE1066H638	10M SMS 25V M FM5 TP
		C250	0CN1010K518	100P 50V K B TA26
		C251	0CN1010K518	100P 50V K B TA26
		C260	0CE4766F638	47M SMS 16V M FM5 TP5
		C3D1	0CE1076F638	100M SMS 16V M FM5 TP(5)
		C3D2	0CX5600K408	56P 50V J SL TA26
		C3P1	0CN2230H948	0.022M 25V Z F TA26
		C3P2	0CN2230H948	0.022M 25V Z F TA26
		C3P3	0CN2230H948	0.022M 25V Z F TA26
		C3P5	0CX3900K408	39P 50V J SL TA26
		C3P6	0CC3300K415	33P 50V J NPO TP
		C3Q1	0CN1040K948	0.1M 50V Z F TA26
		C3Q2	0CN1040K948	0.1M 50V Z F TA26
		C3Z1	0CC1500K415	15P 50V J NPO TS
	OR	C3Z1	0CX1500K408	15P 50V J SL TA26
		C301	0CC6800K415	68P 50V J NPO TP
		C302	0CC1500K415	15P 50V J NPO TS
	OR	C302	0CX1500K408	15P 50V J SL TA26
		C303	0CC1510K415	150P 50V J NPO TS
		C304	0CC1510K415	150P 50V J NPO TS
		C305	0CX3300K408	33P 50V J SL TA26
		C305	0CC3300K415	33P 50V J NPO TP
	OR	C306	0CN1030F678	0.01M 16V M Y TA26
		C307	0CN2230H948	0.022M 25V Z F TA26
		C308	0CE4766F638	47M SMS 16V M FM5 TP5
		C309	0CE4766F638	47M SMS 16V M FM5 TP5
		C310	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C311	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C312	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C313	0CN2230H948	0.022M 25V Z F TA26
		C314	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C315	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C316	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C317	0CE4766F638	47M SMS 16V M FM5 TP5
		C318	0CN2230H948	0.022M 25V Z F TA26
		C319	0CN1040K948	0.1M 50V Z F TA26
		C320	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C321	0CE4766F638	47M SMS 16V M FM5 TP5
		C322	0CN1030F678	0.01M 16V M Y TA26
		C323	0CE1066H638	10M SMS 25V M FM5 TP
		C324	0CE2254K638	2.2M SRA 50V M FM5 TP(5)
		C325	0CN1030F678	0.01M 16V M Y TA26
		C326	0CN1030F678	0.01M 16V M Y TA26
		C327	0CQ6831N409	0.068U 100V J POLY TP
		C328	0CE4766F638	47M SMS 16V M FM5 TP5
		C329	0CN2230H948	0.022M 25V Z F TA26
		C3P4	0CN2230H948	0.022M 25V Z F TA26
		C330	0CC0500K015	5P 50V C NPO TS
		C331	0CN3910K518	390P 50V K B TA26
	OR	C332	0CC3300K415	33P 50V J NPO TP
		C332	0CX3300K408	33P 50V J SL TA26
		C333	0CX4700K408	47P 50V J SL TA26
		C334	0CE4746K638	0.47M SMS 50V M TP(5)
		C341	0CN2230H948	0.022M 25V Z F TA26
		C335	0CE2254K638	2.2M SRA 50V M FM5 TP(5)
		C336	0CE2254K638	2.2M SRA 50V M FM5 TP(5)
		C337	0CC2210K405	220P 50V J SL TP
		C338	0CX3300K408	33P 50V J SL TA26
	OR	C338	0CC3300K415	33P 50V J NPO TP

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C339	0CC1210K415	120PF 50V 5 CH FM(5MM)
		C340	0CC2200K415	22P 50V J NPO TS
		C342	0CC2400K415	24P 50V J NPO TP
		C343	0CC8200K415	82P 50V J NPO TP
		C344	0CC2400K415	24P 50V J NPO TP
		C345	0CE4766F638	47M SMS 16V M FM5 TP5
		C346	0CN2230H948	0.022M 25V Z F TA26
		C347	0CN1030F678	0.01M 16V M Y TA26
		C348	0CN1030F678	0.01M 16V M Y TA26
		C349	0CE3346K638	0.33M SMS 50V M FM5 TP(5)
		C350	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C351	0CC1500K415	15P 50V J NPO TS
	OR	C351	0CX1500K408	15P 50V J SL TA26
		C352	0CN1030F678	0.01M 16V M Y TA26
		C353	0CN2230H948	0.022M 25V Z F TA26
		C354	0CN1030F678	0.01M 16V M Y TA26
		C355	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C356	0CC6800K415	68P 50V J NPO TP
		C357	0CN1030F678	0.01M 16V M Y TA26
		C358	0CC1510K415	150P 50V J NPO TS
		C359	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C360	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C361	0CN2230H948	0.022M 25V Z F TA26
		C362	0CK1030K945	0.01M 50V Z F TS
		C363	0CK4730K945	473P 50V Z 00
		C365	0CK4730K945	473P 50V Z 00
		C366	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C367	0CX4700K408	47P 50V J SL TA26
		C368	0CC1010K415	100P 50V J NPO TS
		C369	0CX2700K408	27P 50V J SL TA26
		C370	0CN2230H948	0.022M 25V Z F TA26
		C371	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C372	0CN1030F678	0.01M 16V M Y TA26
		C373	0CN1030F678	0.01M 16V M Y TA26
		C374	0CN1030F678	0.01M 16V M Y TA26
		C375	0CN2230H948	0.022M 25V Z F TA26
		C376	0CX4700K408	47P 50V J SL TA26
		C377	0CE4766F638	47M SMS 16V M FM5 TP5
		C378	0CN2230H948	0.022M 25V Z F TA26
		C379	0CN1030F678	0.01M 16V M Y TA26
		C381	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C387	0CE1066H638	10M SMS 25V M FM5 TP
		C388	0CE4766F638	47M SMS 16V M FM5 TP5
		C394	0CN1030F678	0.01M 16V M Y TA26
		C398	0CE1076F638	100M SMS 16V M FM5 TP(5)
		C399	0CN1030F678	0.01M 16V M Y TA26
		C401	0CE4766F638	47M SMS 16V M FM5 TP5
		C402	0CQ2231N409	0.022U 100V J POLY TP
		C404	0CN3910K518	390P 50V K B TA26
		C406	0CE1066H638	10M SMS 25V M FM5 TP
		C407	0CQ1031N409	0.01U 100V J POLY TP
		C408	0CE1066H638	10M SMS 25V M FM5 TP
		C409	0CE3364F638	33M SRA 16V M FM5 TP(5)
		C410	0CQ1021N409	0.001U 100V J POLY TP
		C411	0CE1066H638	10M SMS 25V M FM5 TP
		C412	0CE1066H638	10M SMS 25V M FM5 TP
		C413	0CE4766F638	47M SMS 16V M FM5 TP5
		C415	0CE4766F638	47M SMS 16V M FM5 TP5
		C416	0CE1066H638	10M SMS 25V M FM5 TP
		C417	0CQ1231N409	0.012U 100V J POLY TP

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C419	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C420	0CQ1221N409	0.0012U 100V J POLY TP
		C421	0CE1066H638	10M SMS 25V M FM5 TP
		C422	0CE1066H638	10M SMS 25V M FM5 TP
		C423	0CE1066H638	10M SMS 25V M FM5 TP
		C426	0CQ1031N409	0.01U 100V J POLY TP
		C427	0CQ1031N409	0.01U 100V J POLY TP
		C428	0CQ8221N409	0.0082U 100V J POLY TP
		C429	0CQ5631N409	0.056U 100V J POLY TP
		C430	0CN2210K518	220P 50V K B TA26
		C433	0CE1066H638	10M SMS 25V M FM5 TP
		C435	0CE2246K638	0.22M SMS 50V M FM5 TP(5)
		C501	0CE4766F638	47M SMS 16V M FM5 TP5
		C502	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C503	0CE2266F636	22M SMS 16V M FM5 BP TP(D)
		C504	0CN1030F678	0.01M 16V M Y TA26
		C505	0CN1030F678	0.01M 16V M Y TA26
		C506	0CE3364F638	33M SRA 16V M FM5 TP(5)
		C507	0CN1030F678	0.01M 16V M Y TA26
		C508	0CN1030F678	0.01M 16V M Y TA26
		C509	0CN1030F678	0.01M 16V M Y TA26
		C510	0CE4766F638	47M SMS 16V M FM5 TP5
		C511	0CE4766F638	47M SMS 16V M FM5 TP5
		C512	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C513	0CN4710K518	470P 50V K B TA26
		C514	0CN1030F678	0.01M 16V M Y TA26
		C560	0CN1030F678	0.01M 16V M Y TA26
		C601	0CC1500K402	15P 50V J SL F
		C602	0CC2700K412	27P 50V J NPO F
		C603	0CE4766D610	47M SMS 10V M FL
		C606	0CE4746K630	0.47M SMS 50V M FM5
		C701	0CN1030F678	0.01M 16V M Y TA26
		C702	0CN1030F678	0.01M 16V M Y TA26
		C704	0CC2200K415	22P 50V J NPO TS
		C706	0CQ1031N409	0.01U 100V J POLY TP
		C707	0CC1810K405	180P 50V J SL TP
		C708	0CN1030F678	0.01M 16V M Y TA26
		C709	0CE4766F638	47M SMS 16V M FM5 TP5
		C711	0CN1030F678	0.01M 16V M Y TA26
		C712	0CN3310K518	330P 50V K B TA26
		C713	0CE1056K638	1.0M SMS 50V M FM5 TP(5)
		C714	0CX2700K408	27P 50V J SL TA26
		C715	0CN1030F678	0.01M 16V M Y TA26
		C716	0CX4700K408	47P 50V J SL TA26
		C717	0CX4700K408	47P 50V J SL TA26
		C718	0CN1030F678	0.01M 16V M Y TA26
		C719	0CE4766F638	47M SMS 16V M FM5 TP5
		C720	0CX1200K408	12P 50V J SL TA26
		C721	0CX2700K408	27P 50V J SL TA26
		C722	0CE4766F638	47M SMS 16V M FM5 TP5
		C724	0CE2256K638	2.2M SMS 50V M FM5 TP(5)
		C725	0CE2256K638	2.2M SMS 50V M FM5 TP(5)
		C726	0CQ4721N409	0.0047U 100V J POLY TP
		C727	0CN1030F678	0.01M 16V M Y TA26
		C728	0CE4774F638	470M SRA 16V M FM5 TP(5)
		C729	0CE1066H638	10M SMS 25V M FM5 TP
		C730	0CQ2231N409	0.022U 100V J POLY TP
		C731	0CN1030F678	0.01M 16V M Y TA26
		C732	0CN1030F678	0.01M 16V M Y TA26
		C733	0CE4766F638	47M SMS 16V M FM5 TP5
		C734	0CE4746K638	0.47M SMS 50V M TP(5)
		C735	0CQ4731N409	0.047U 100V J POLY TP
		C736	0CQ1041N409	0.1U 100V J POLY TP
		C737	0CQ1041N409	0.1U 100V J POLY TP
		C740	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C742	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C743	0CE3356K638	3.3M SMS 50V M FM5 TP(5)
		C744	0CN1030F678	0.01M 16V M Y TA26
		C745	0CE1046K638	0.1M SMS 50V M FM5 TP(5)
		C746	0CE4756K638	4.7M SMS 50V M FM5 TP(5)
		C747	0CE4766F638	47M SMS 16V M FM5 TP5
		C748	0CN1030F678	0.01M 16V M Y TA26
		C752	0CE4766F638	47M SMS 16V M FM5 TP5
		C753	0CE1051K636	1.0U SM 50V M FM5 BP TP(D)
		C754	0CE4766K638	47M SMS 50V M FM5 TP
		C757	0CQ1031N409	0.01U 100V J POLY TP

DIGITRON

		DG601	514-016C	11BT-75GK(6BT117G-MODIFY)

DELAY LINE

		DL301	617-011A	MS-31PC

DIODE

*		D101	0DD539300AA	RECT IN5393
*		D102	0DD539300AA	RECT 1N5393
*		D103	0DD539300AA	RECT IN5393
*		D104	0DD539300AA	RECT IN5393
*		D105	0DD539300AA	RECT IN5393
*		D106	0DD539300AA	RECT IN5393
*		D107	0DD539300AA	RECT IN5393
*		D108	0DD539300AA	RECT IN5393
		D109	0DD400300DA	RECT.1N4003(KARIBONG)
		D110	0DD400300DA	RECT.1N4003(KARIBUNG)
		D111	0DD400300DA	RECT.1N4003(KARIBONG)
		D112	0DD131000AA	1SS131
		D113	0DD131000AA	1SS131
		D114	0DD131000AA	1SS131
		D202	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D203	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D204	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D205	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D206	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D207	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D208	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D209	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D210	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D211	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D301	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D304	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D401	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D402	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D403	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D405	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D501	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D601	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D602	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM
		D603	0DD131009AA	1SS131 DETECT.SW(26MM)TP RUHM
		D604	0DD131009AA	1SS131 DETECT.SW(26MM)TP ROHM

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		D605	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D606	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D608	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D609	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D701	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D702	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
FILTER				
		FL301	616-129C	3MLPF+EQ(Q0210) SANGSHIN
		FL302	616-140A	L/C SFB4,139 TDK
		FL401	616-069A	12KHZ 253AGGS
		Z701	616-099B	SAW OFW G1961 (SIHENS)
		Z702	616-038D	SFT5.5MA
		Z703	616-036B	TPS5.5MB
		Z704	616-039H	CDA5.5ME21
FUSE				
*		F101	585-011A	T500MA 250V
*	OR	F101	585-012A	T500MA.250V PAL (SOC)
*		F102	585-011H	T 2.5A, 250V S506
*		F103	585-011H	T 2.5A, 250V S506
IC				
		IC001	0ISA732000A	LA7320 2HEAD PRE-AMP
		IC101	0IKE780050A	KIA78005AP(KEC)
	OR	IC101	0IMA780500A	AN7805 (5V REG.1A)
		IC102	0IKE780060A	KIA78006AP 6V1A REG
	OR	IC102	0IMA780600A	AN7806 6V1AREG MATSUSHITA
		IC201	0IHI497230B	HD49723ANT (SERVO) HITACHI
	OR	IC201	0IHI497230A	HD49723 (1280 SERVO)
		IC301	0ISA732300B	LA7323 LUMINANCE (DIP PACK)
		IC302	0ISA733000A	LA7330 COLOR MULTI
		IC303	0ISA731100A	LA7311 (PAL/SECAM-D) SANYO
		IC304	0IKK740100A	MSM7401RS(CCD IC) NTSC KSS
		IC305	0ISA722200A	LA7222 (1280 AUDIO)
		IC401	0ISA729500A	LA7295 (1280 AUDIO)
		IC501	668-161C	SH89
		IC502	0IGS744500A	GL7445 (MOTOR DRIV-1CH) GSS
	OR	IC502	0ISA164100A	LB1641(1-CH)MOTOR DRIV SANYO
		IC601	668-460A	HD404708A75S(TIMER) 1900P HIT
		IC602	0IMI586530A	M58653P 14X50MITSUBISHI"ESD
		IC701	0ISA754500A	LA7545 (1280 T/IF)
		IC702	0ISA791000A	LA7910 TV BAND SELEC
		IC703	0IGS393000A	GL393 DUAL COMPARATOR
	OR	IC703	0ISS393000A	LM393 COMPARATOR
LED				
		LD601	0DL162000AA	KLR162E (RD) KEC
COIL				
		L002	0LR1800K035	180M K 6X6 L5 TP
		L003	0LR0472K035	47M K 6X6 L5 TP
		L004	0LR0332K035	33M K 6X6 L5 TP
		L005	0LR0272K035	27M K 6X6 L5 TP
		L006	0LR0222K035	22M K 6X6 L5 TP
		L007	0LR1000K035	100M K 6X6 L5 TP
		L101	0LR1000K530	100M K 6X6 F BULK
		L201	0LR1000K035	100M K 6X6 L5 TP

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		L3D1	0LA0822K018	82M K 2.3X3.4 L5 TP
		L3Q1	0LA0152K018	15M K 2.3X3.4 L5 TP
		L301	0LR0332K035	33M K 6X6 L5 TP
		L302	0LR0332K035	33M K 6X6 L5 TP
		L303	0LA0822K018	82M K 2.3X3.4 L5 TP
		L304	0LR2700K035	270M K 6X6 L5 TP
		L305	0LR1000K035	100M K 6X6 L5 TP
		L306	0LR1000K035	100M K 6X6 L5 TP
		L307	0LA0682K018	68M K 2.3X3.4 L5 TP
		L308	0LA0682K018	68M K 2.3X3.4 L5 TP
		L309	0LR1000K035	100M K 6X6 L5 TP
		L310	0LA0472K018	47M K 2.3X3.4 L5 TP
		L311	0LR1000K035	100M K 6X6 L5 TP
		L312	0LA0152K018	15M K 2.3X3.4 L5 TP
		L314	0LA0182K018	18M K 2.3X3.4 L5 TP
		L315	0LA0471K018	4.7M K 2.3X3.4 L5 TP
		L316	0LR1000K035	100M K 6X6 L5 TP
		L318	0LR1000K035	100M K 6X6 L5 TP
		L319	0LR1000K035	100M K 6X6 L5 TP
		L320	0LA1200K018	120M K 2.3X3.4 L5 TP
		L321	0LA0472K018	47M K 2.3X3.4 L5 TP
		L401	0LR1000K035	100M K 6X6 L5 TP
		L403	0LR1000K035	100M K 6X6 L5 TP
		L404	637-013C	15.0MH-J
		L501	0LR0472K035	47M K 6X6 L5 TP
		L601	0LA0222K018	22M K 2.3X3.4 L5 TP
		L701	0LR0220M035	0.22M M 6X6 L5 TP
		L702	637-006W	1.3MH
		L703	0LR0121K035	1.2M K 6X6 L5 TP
		L705	0LA0222K018	22M K 2.3X3.4 L5 TP
		L706	0LR1000K035	100M K 6X6 L5 TP
		L707	0LA0152K018	15M K 2.3X3.4 L5 TP
		L708	0LA0332K018	33M K 2.3X3.4 L5 TP
		L709	0LR1000K035	100M K 6X6 L5 TP
		L710	0LR1000K035	100M K 6X6 L5 TP
		L711	0LA0222K018	22M K 2.3X3.4 L5 TP
		L712	0LA0102K018	10M K 2.3X3.4 L5 TP
		L713	0LR1000K035	100M K 6X6 L5 TP
		L714	0LA0222K018	22M K 2.3X3.4 L5 TP
		L715	0LR1000K035	100M K 6X6 L5 TP
		L717	0LR0222K035	22M K 6X6 L5 TP
		T401	633-032C	BIAS-OSC(MISUMI) 70KHZ
		T701	633-021C	PIF(D/S)
		T702	633-022C	AFC 82P(D/S)
MODULATOR				
		MD701	592-012B	MDK6D701 PAL-G GAE
	OR	MD701	592-801A	MCB8-UG3613 PAL-B/G JALCO
C·B·A(CIRCUIT BOARD ASSEMBLY)				
		PBA00	511-813A	PRE-AMP
		PBM00	511-910E	MAIN(SKD.W/O TUNER)
		PBP00	511-970A	POWER
		PBT00	511-906A	TIMER
TRANSFORMER				
		PT101	641-325B	225V/240V 50HZ
	OR	PT101	641-025B	225V/240V 50HZ

TRANSISTOR

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		Q001	0TR181509AD	KTC1815-BL TP KEC
		Q002	0TR181509AD	KTC1815-BL TP KEC
		Q003	0TR101509AC	KEC KTA1015-GR TP
		Q101	0TR141400AA	KTD1414 POWER (220 PACK) KEC
	OR	Q101	0TR215700AA	2SD2157P(4000-10000)MATSUSHIT
		Q102	0TR141400AA	KTD1414 POWER (220 PACK) KEC
	OR	Q102	0TR215700AA	2SD2157P(4000-10000)MATSUSHIT
		Q103	0TR181500AD	KTC1815-BL
		Q104	0TR181500AD	KTC1815-BL
		Q105	0TR120300AB	DEGI KN1203 FORMING KEC
		Q106	0TR966000AA	KTA966-Y
		Q107	0TR120300AB	DEGI KN1203 FORMING KEC
		Q108	0TR120300AB	DEGI KN1203 FORMING KEC
		Q109	0TR101500AA	KTA1015(Y) PNP TO-92,KEC
		Q203	0TR120409AA	DEGI KN1204 47K-47K TP KEC
	OR	Q203	667-032A	DTC144ES
		Q204	0TR120409AA	DEGI KN1204 47K-47K TP KEC
	OR	Q204	667-032A	DTC144ES
		Q205	0TR120409AA	DEGI KN1204 47K-47K TP KEC
	OR	Q205	667-032A	DTC144ES
		Q206	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q207	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q208	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q209	0TR117009AA	FET KTK117A KEC TP
		Q3K1	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q301	0TR101509AA	A1015 KEC Y TO-92 TP
		Q304	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q305	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q306	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q307	0TR101509AA	A1015 KEC Y TO-92 TP
		Q308	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q309	0TR101509AA	A1015 KEC Y TO-92 TP
		Q310	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q311	0TR101509AA	A1015 KEC Y TO-92 TP
		Q312	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q313	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q314	0TR101509AA	A1015 KEC Y TO-92 TP
		Q315	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q316	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q317	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q318	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q319	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q320	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q321	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q322	0TR101509AA	A1015 KEC Y TO-92 TP
		Q323	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q325	0TR101509AA	A1015 KEC Y TO-92 TP
		Q326	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q401	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q402	0TR101509AA	A1015 KEC Y TO-92 TP
		Q403	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q404	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q405	0TR223609AB	KEC KTC2236-Y TP
		Q501	0TR181509AD	KTC1815-BL TP KEC
		Q502	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q503	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q505	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q506	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q507	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q701	0TR388009AB	KEC KTC388A-Y TP
		Q702	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q703	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q704	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q705	0TR101509AC	KEC KTA1015-GR TP
		Q706	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q707	0TR181509AB	KTC1815-Y TO-92 TP KEC
		Q708	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q709	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q710	0TR120409AA	DEGI KN1204 47K-47K TP KEC
		Q711	0TR220309AA	DEGI KN2203 22K-22K TP KEC
		Q712	0TR117009AA	FET KTK117A KEC TP
		Q713	0TR181509AB	KTC1815-Y TO-92 TP KEC

REMOCON RECEIVER

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		RC601	668-226A	R/C RECEIVER(KTC.H=15) 34L
	OR	RC601	668-226F	SBX1610-C2 (SONY H=15) R/C

RESISTER

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R001	0RD1201F608	1.2K 1/6W 5 TA26
		R002	0RD1201F608	1.2K 1/6W 5 TA26
		R003	0RD1001F608	1.0K 1/6W 5 TA26
		R004	0RD3900F608	390 1/6W 5 TA26
		R005	0RD5600F608	560 1/6W 5 TA26
		R006	0RD2201F608	2.2K 1/6W 5 TA26
		R007	0RD5601F608	5.6K 1/6W 5 TA26
		R008	0RD2701F608	2.7K 1/6W 5 TA26
		R009	0RD3900F608	390 1/6W 5 TA26
		R010	0RD2201F608	2.2K 1/6W 5 TA26
		R011	0RD3900F608	390 1/6W 5 TA26
		R012	0RD2201F608	2.2K 1/6W 5 TA26
		R013	0RD1001F608	1.0K 1/6W 5 TA26
		R014	0RD0511F608	5.1 1/6W 5 TA26
		R015	0RD2200F608	220 1/6W 5 TA26
		R016	0RD1800F608	180 1/6W 5 TA26
		R017	0RD6800F608	680 1/6W 5 TA26
		R101	RD102JM5	1K-J 1/2W MAN TYPE(ABCO)
		R102	RD102JM5	1K-J 1/2W MAN TYPE(ABCO)
		R103	0RD1001F620	1.0K 1/6W 5 M5
		R104	0RD1001F620	1.0K 1/6W 5 M5
		R105	0RD4701F620	4.7K 1/6W 5 M5
		R106	0RD1501F620	1.5K 1/6W 5 M5
		R107	0RD1003F620	100K 1/6W 5 M5
		R108	0RD1200F620	120 1/6W 5 M5
		R109	0RD1502F620	15K 1/6W 5 M5
		R110	0RD1002F620	10K 1/6W 5 M5
		R201	0RD4702F608	47K 1/6W 5 TA26
		R202	0RD1503F608	150K 1/6W 5 TA26
		R203	0RD1802F608	18K 1/6W 5 TA26
		R204	0RD1502F608	15K 1/6W 5 TA26
		R205	0RD1502F608	15K 1/6W 5 TA26
		R206	0RD1003F608	100K 1/6W 5 TA26
		R207	0RD1004F608	1.0M 1/6W 5 TA26
		R208	0RD8202F608	82K 1/6W 5 TA26
		R209	0RD1203F608	120K 1/6W 5 TA26
		R210	0RD1502F608	15K 1/6W 5 TA26
		R211	0RD2203F608	220K 1/6W 5 TA26
		R212	0RD1202F608	12K 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R213	0RD3303F608	330K 1/6W 5 TA26
		R214	0RD1502F608	15K 1/6W 5 TA26
		R215	0RD1503F608	150K 1/6W 5 TA26
		R216	0RD5602F608	56K 1/6W 5 TA26
		R217	0RD4702F608	47K 1/6W 5 TA26
		R218	0RD1004F608	1.0M 1/6W 5 TA26
		R219	0RD1802F608	18K 1/6W 5 TA26
		R220	0RD1502F608	15K 1/6W 5 TA26
		R221	0RD3901F608	3.9K 1/6W 5 TA26
		R224	0RD8201F608	8.2K 1/6W 5 TA26
		R225	0RD2201F608	2.2K 1/6W 5 TA26
		R226	0RD1002F608	10K 1/6W 5 TA26
		R227	0RD2201F608	2.2K 1/6W 5 TA26
		R229	0RD2201F608	2.2K 1/6W 5 TA26
		R230	0RD1002F608	10K 1/6W 5 TA26
		R231	0RD4703F608	470K 1/6W 5 TA26
		R232	0RD3303F608	330K 1/6W 5 TA26
		R233	0RD1203F608	120K 1/6W 5 TA26
		R234	0RD1002F608	10K 1/6W 5 TA26
		R235	0RD1002F608	10K 1/6W 5 TA26
		R236	0RD2702F608	27K 1/6W 5 TA26
		R237	0RD1004F608	1.0M 1/6W 5 TA26
		R238	0RD1001F608	1.0K 1/6W 5 TA26
		R239	0RD5601F608	5.6K 1/6W 5 TA26
		R240	0RD1501F608	1.5K 1/6W 5 TA26
		R241	0RD1002F608	10K 1/6W 5 TA26
		R242	0RD0101F608	1.0 1/6W 5 TA26
		R243	0RD0101F608	1.0 1/6W 5 TA26
		R244	0RD5601F608	5.6K 1/6W 5 TA26
		R245	0RD5601F608	5.6K 1/6W 5 TA26
		R246	0RD1502F608	15K 1/6W 5 TA26
		R248	0RD1002F608	10K 1/6W 5 TA26
		R249	0RD2703F608	270K 1/6W 5 TA26
		R250	0RD8202F608	82K 1/6W 5 TA26
		R251	0RD3901F608	3.9K 1/6W 5 TA26
		R252	0RD1001F608	1.0K 1/6W 5 TA26
		R253	0RD1803F608	180K 1/6W 5 TA26
		R254	0RD1503F608	150K 1/6W 5 TA26
		R255	0RD2701F608	2.7K 1/6W 5 TA26
		R256	0RD6800F608	680 1/6W 5 TA26
		R257	0RD3301F608	3.3K 1/6W 5 TA26
		R3D1	0RD0752F608	75 1/6W 5 TA26
		R3D2	0RD1002F608	10K 1/6W 5 TA26
		R3P1	0RD1201F608	1.2K 1/6W 5 TA26
		R3P6	0RD1001F608	1.0K 1/6W 5 TA26
		R301	0RD1800F608	180 1/6W 5 TA26
		R302	0RD8200F608	820 1/6W 5 TA26
		R303	0RD3302F608	33K 1/6W 5 TA26
		R304	0RD3302F608	33K 1/6W 5 TA26
		R305	0RD1001F608	1.0K 1/6W 5 TA26
		R306	0RD6802F608	68K 1/6W 5 TA26
		R307	0RD1001F608	1.0K 1/6W 5 TA26
		R308	0RD1004F608	1.0M 1/6W 5 TA26
		R309	0RD1001F608	1.0K 1/6W 5 TA26
		R310	0RD4701F608	4.7K 1/6W 5 TA26
		R311	0RD3301F608	3.3K 1/6W 5 TA26
		R312	0RD3900F608	390 1/6W 5 TA26
		R315	0RD0682F608	68 1/6W 5 TA26
		R316	0RD2201F608	2.2K 1/6W 5 TA26
		R319	0RD1502F608	15K 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R321	0RD2202F608	22K 1/6W 5 TA26
		R322	0RD1503F608	150K 1/6W 5 TA26
		R323	0RD0752F608	75 1/6W 5 TA26
		R324	0RD4703F608	470K 1/6W 5 TA26
		R325	0RD1002F608	10K 1/6W 5 TA26
		R326	0RD1201F608	1.2K 1/6W 5 TA26
		R327	0RD2201F608	2.2K 1/6W 5 TA26
		R328	0RD2201F608	2.2K 1/6W 5 TA26
		R329	0RD2201F608	2.2K 1/6W 5 TA26
		R330	0RD2201F608	2.2K 1/6W 5 TA26
		R331	0RD2701F608	2.7K 1/6W 5 TA26
		R332	0RD5600F608	560 1/6W 5 TA26
		R333	0RD3301F608	3.3K 1/6W 5 TA26
		R334	0RD3301F608	3.3K 1/6W 5 TA26
		R335	0RD1001F608	1.0K 1/6W 5 TA26
		R336	0RD1004F608	1.0M 1/6W 5 TA26
		R337	0RD1201F608	1.2K 1/6W 5 TA26
		R338	0RD3901F608	3.9K 1/6W 5 TA26
		R339	0RD1001F608	1.0K 1/6W 5 TA26
		R340	0RD2201F608	2.2K 1/6W 5 TA26
		R341	0RD1004F608	1.0M 1/6W 5 TA26
		R342	0RD1004F608	1.0M 1/6W 5 TA26
		R343	0RD2201F608	2.2K 1/6W 5 TA26
		R344	0RD2201F608	2.2K 1/6W 5 TA26
		R345	0RD6801F608	6.8K 1/6W 5 TA26
		R346	0RD2700F608	270 1/6W 5 TA26
		R347	0RD8200F608	820 1/6W 5 TA26
		R348	0RD1200F608	120 1/6W 5 TA26
		R349	0RD3900F608	390 1/6W 5 TA26
		R350	0RD1501F608	1.5K 1/6W 5 TA26
		R351	0RD3901F608	3.9K 1/6W 5 TA26
		R352	0RD1001F608	1.0K 1/6W 5 TA26
		R353	0RD1001F608	1.0K 1/6W 5 TA26
		R354	0RD2201F608	2.2K 1/6W 5 TA26
		R355	0RD3902F608	39K 1/6W 5 TA26
		R356	0RD1801F608	1.8K 1/6W 5 TA26
		R357	0RD5600F608	560 1/6W 5 TA26
		R358	0RD1502F608	15K 1/6W 5 TA26
		R359	0RD3901F608	3.9K 1/6W 5 TA26
		R360	0RD2202F608	22K 1/6W 5 TA26
		R361	0RD1201F608	1.2K 1/6W 5 TA26
		R363	0RD6801F608	6.8K 1/6W 5 TA26
		R364	0RD2202F608	22K 1/6W 5 TA26
		R366	0RD8201F608	8.2K 1/6W 5 TA26
		R367	0RD1003F608	100K 1/6W 5 TA26
		R368	0RD1201F608	1.2K 1/6W 5 TA26
		R369	0RD1801F608	1.8K 1/6W 5 TA26
		R371	0RD4702F608	47K 1/6W 5 TA26
		R372	0RD1201F608	1.2K 1/6W 5 TA26
		R373	0RD1501F608	1.5K 1/6W 5 TA26
		R374	0RD1001F608	1.0K 1/6W 5 TA26
		R376	0RD1001F608	1.0K 1/6W 5 TA26
		R382	0RD1002F608	10K 1/6W 5 TA26
		R383	0RD2201F608	2.2K 1/6W 5 TA26
		R384	0RD2201F608	2.2K 1/6W 5 TA26
		R385	0RD1501F608	1.5K 1/6W 5 TA26
		R386	0RD8200F608	820 1/6W 5 TA26
		R387	0RD1001F608	1.0K 1/6W 5 TA26
		R392	0RD3300F608	330 1/6W 5 TA26
		R394	0RD2700F608	270 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R395	0RD3300F608	330 1/6W 5 TA26
		R396	0RD6801F608	6.8K 1/6W 5 TA26
		R397	0RD4701F608	4.7K 1/6W 5 TA26
		R398	0RD8200F608	820 1/6W 5 TA26
		R4D01	0RD0102F608	10 1/6W 5 TA26
		R402	0RD3303F608	330K 1/6W 5 TA26
		R403	0RD1202F608	12K 1/6W 5 TA26
		R404	0RD3902F608	39K 1/6W 5 TA26
		R405	0RD4701F608	4.7K 1/6W 5 TA26
		R406	0RD5603F608	560K 1/6W 5 TA26
		R407	0RD2702F608	27K 1/6W 5 TA26
		R408	0RD5602F608	56K 1/6W 5 TA26
		R409	0RD1002F608	10K 1/6W 5 TA26
		R410	0RD2702F608	27K 1/6W 5 TA26
		R411	0RD5600F608	560 1/6W 5 TA26
		R413	0RD2201F608	2.2K 1/6W 5 TA26
		R414	0RD1502F608	15K 1/6W 5 TA26
		R415	0RD2201F608	2.2K 1/6W 5 TA26
		R416	0RD5601F608	5.6K 1/6W 5 TA26
		R417	0RD4702F608	47K 1/6W 5 TA26
		R418	0RD4702F608	47K 1/6W 5 TA26
		R419	0RD6800F608	680 1/6W 5 TA26
		R420	0RD1801F608	1.8K 1/6W 5 TA26
		R421	0RD1200F608	120 1/6W 5 TA26
		R422	0RD8200F608	820 1/6W 5 TA26
		R423	0RD2200F608	220 1/6W 5 TA26
		R424	0RD2201F608	2.2K 1/6W 5 TA26
		R425	0RD2201F608	2.2K 1/6W 5 TA26
		R426	0RD0472F608	47 1/6W 5 TA26
		R427	0RD0102F608	10 1/6W 5 TA26
		R428	0RD0102F608	10 1/6W 5 TA26
		R429	0RD2702F608	27K 1/6W 5 TA26
		R433	0RD1500F608	150 1/6W 5 TA26
		R435	0RD1000F608	100 1/6W 5 TA26
		R501	0RD1004F608	1.0M 1/6W 5 TA26
		R502	0RD1003F608	100K 1/6W 5 TA26
		R503	0RD1003F608	100K 1/6W 5 TA26
		R504	0RD1003F608	100K 1/6W 5 TA26
		R505	0RD2702F608	27K 1/6W 5 TA26
		R506	0RD2702F608	27K 1/6W 5 TA26
		R508	0RD4701F608	4.7K 1/6W 5 TA26
		R509	0RD4701F608	4.7K 1/6W 5 TA26
		R510	0RD1203F608	120K 1/6W 5 TA26
		R511	0RD3300F608	330 1/6W 5 TA26
		R512	0RD4701F608	4.7K 1/6W 5 TA26
		R513	0RD4701F608	4.7K 1/6W 5 TA26
		R514	0RD4701F608	4.7K 1/6W 5 TA26
		R515	0RD1502F608	15K 1/6W 5 TA26
		R516	0RD1002F608	10K 1/6W 5 TA26
		R517	0RD1002F608	10K 1/6W 5 TA26
		R521	0RD4701F608	4.7K 1/6W 5 TA26
		R522	0RD4702F608	47K 1/6W 5 TA26
		R523	0RD4701F608	4.7K 1/6W 5 TA26
		R524	0RD4701F608	4.7K 1/6W 5 TA26
		R525	0RD4701F608	4.7K 1/6W 5 TA26
		R526	0RD4701F608	4.7K 1/6W 5 TA26
		R527	0RD4701F608	4.7K 1/6W 5 TA26
		R528	0RD4701F608	4.7K 1/6W 5 TA26
		R529	0RD1002F608	10K 1/6W 5 TA26
		R530	0RD5600F608	560 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R531	0RD1001F608	1.0K 1/6W 5 TA26
		R601	0RD1004F608	1.0M 1/6W 5 TA26
		R606	0RD6802F608	68K 1/6W 5 TA26
		R607	0RD1002F608	10K 1/6W 5 TA26
		R608	0RD1002F608	10K 1/6W 5 TA26
		R609	0RD1002F608	10K 1/6W 5 TA26
		R610	0RD1002F608	10K 1/6W 5 TA26
		R611	0RD6802F608	68K 1/6W 5 TA26
		R612	0RD6802F608	68K 1/6W 5 TA26
		R613	0RD6802F608	68K 1/6W 5 TA26
		R614	0RD6802F608	68K 1/6W 5 TA26
		R616	0RD3302F608	33K 1/6W 5 TA26
		R617	0RD5600F608	560 1/6W 5 TA26
		R701	0RD0822F608	82 1/6W 5 TA26
		R702	0RD1000F608	100 1/6W 5 TA26
		R703	0RD0472F608	47 1/6W 5 TA26
		R704	0RD4701F608	4.7K 1/6W 5 TA26
		R705	0RD1201F608	1.2K 1/6W 5 TA26
		R706	0RD1800F608	180 1/6W 5 TA26
		R707	0RD0682F608	68 1/6W 5 TA26
		R708	0RD5601F608	5.6K 1/6W 5 TA26
		R709	0RD8200F608	820 1/6W 5 TA26
		R711	0RD1801F608	1.8K 1/6W 5 TA26
		R712	0RD1003F608	100K 1/6W 5 TA26
		R713	0RD1203F608	120K 1/6W 5 TA26
		R714	0RD2201F608	2.2K 1/6W 5 TA26
		R715	0RD5600F608	560 1/6W 5 TA26
		R716	0RD3300F608	330 1/6W 5 TA26
		R717	0RD4701F608	4.7K 1/6W 5 TA26
		R718	0RD1502F608	15K 1/6W 5 TA26
		R719	0RD1801F608	1.8K 1/6W 5 TA26
		R720	0RD1801F608	1.8K 1/6W 5 TA26
		R721	0RD6801F608	6.8K 1/6W 5 TA26
		R722	0RD2200F608	220 1/6W 5 TA26
		R723	0RD2200F608	220 1/6W 5 TA26
		R724	0RD2200F608	220 1/6W 5 TA26
		R725	0RD4700F608	470 1/6W 5 TA26
		R727	0RD2202F608	22K 1/6W 5 TA26
		R728	0RD2203F608	220K 1/6W 5 TA26
		R729	0RD5601F608	5.6K 1/6W 5 TA26
		R730	0RD1001F608	1.0K 1/6W 5 TA26
		R731	0RD1203F608	120K 1/6W 5 TA26
		R732	0RD5601F608	5.6K 1/6W 5 TA26
		R733	0RD3300F608	330 1/6W 5 TA26
		R734	0RD2700F608	270 1/6W 5 TA26
		R735	0RD1001F608	1.0K 1/6W 5 TA26
		R736	0RD3301F608	3.3K 1/6W 5 TA26
		R737	0RD3901F608	3.9K 1/6W 5 TA26
		R738	0RD8203F608	820K 1/6W 5 TA26
		R739	0RD1003F608	100K 1/6W 5 TA26
		R740	0RD2701F608	2.7K 1/6W 5 TA26
		R741	0RD1002F608	10K 1/6W 5 TA26
		R742	0RD1802F608	18K 1/6W 5 TA26
		R743	0RD4701F608	4.7K 1/6W 5 TA26
		R744	0RD5602F608	56K 1/6W 5 TA26
		R745	0RD1202F608	12K 1/6W 5 TA26
		R746	0RD1202F608	12K 1/6W 5 TA26
		R747	0RD1202F608	12K 1/6W 5 TA26
		R750	0RD3901F608	3.9K 1/6W 5 TA26
		R753	0RD5601F608	5.6K 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R754	0RD5601F608	5.6K 1/6W 5 TA26
		R755	0RD5602F608	56K 1/6W 5 TA26
		R757	0RD5602F608	56K 1/6W 5 TA26
		R758	0RD5601F608	5.6K 1/6W 5 TA26
		R759	0RD5601F608	5.6K 1/6W 5 TA26
		R760	0RD1002F608	10K 1/6W 5 TA26
		R762	0RD1202F608	12K 1/6W 5 TA26

SWITCH

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		SW601	556-032F	KHH-10906
		SW602	556-032F	KHH-10906
		SW603	556-032F	KHH-10906
		SW604	556-032F	KHH-10906
		SW605	556-032F	KHH-10906
		SW606	556-032F	KHH-10906
		SW607	556-032F	KHH-10906
		SW608	556-032F	KHH-10906
		SW609	556-032F	KHH-10906
		SW610	556-032F	KHH-10906
		SW611	556-032F	KHH-10906
		SW612	556-032F	KHH-10906
		SW613	556-032F	KHH-10906
		SW614	556-032F	KHH-10906
		SW615	556-032F	KHH-10906
		SW617	556-032F	KHH-10906
		SW618	556-032F	KHH-10906
		SW619	556-032F	KHH-10906
		SW620	556-032F	KHH-10906
		SW621	556-032F	KHH-10906
		SW622	556-032F	KHH-10906
		SW623	556-032F	KHH-10906
		SW624	556-032F	KHH-10906
		SW625	556-032F	KHH-10906
		SW630	556-023I	SSJ-822
	OR	SW630	556-046I	KSA-2240

TUNER

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
*		TU701	521E102A	ET43AF (W/IC)

S	AL	LOCA.NO	PART NO(G$)	SPECIFICATION
		VR201	613-028J	A00-104B
	OR	VR201	613-024J	RH0615C-104B
		VR202	613-028J	A00-104B
	OR	VR202	613-024J	RH0615C-104B
		VR301	613-0287	A00-102B
		VR302	613-028F	A00-223B
		VR303	613-028D	A00-103B
		VR304	613-0287	A00-102B
		VR305	613-0287	A00-102B
		VR306	613-0287	A00-102B
		VR308	613-028D	A00-103B
		VR401	613-028F	A00-223B
		VR402	613-028L	A00-224B
		VR601	611-011F	VR, ROTARY RK09K113-10KB(GAE)
		VR701	613-028G	EVN-D4A A00-333B

CRYSTALS

S	AL	LOCA.NO	PART NO(G$)	SPECIFICATION
		X301	529-020P	4.433619MHZ-SERIES 15PPM
		X501	618-010A	CST4.00MGW-TF01S MURATA
		X601	529-018A	R 4.0MHZ
		X602	529-001B	32.768KHZ

ZENER DIODE

S	AL	LOCA.NO	PART NO(G$)	SPECIFICATION
		ZD101	0DZ130009CC	UZ-13BL 0.5W TP
		ZD102	0DZ150009DC	UZ 15BL (UNIZON)
		ZD103	0DZ130009CC	UZ-13BL 0.5W TP
		ZD104	0DZ330009AB	MTZ-33C TP
		ZD105	0DZ560009BA	UZ5.6BM.0.5W.UNIZON.TP
		ZD106	0IKE574000A	KIA574P (ZENER) KEC
		ZD501	0DZ820009BB	UZ8.2BSC 5M/M TP UNIZON
		ZD502	0DZ390009BA	MTZ3.9B TP ROHM-K
		ZD503	0DZ100009BB	UZ10BSB MINI TP UNIZON

GoldStar

P/N 495-120M

FEB. 1991. Printed in Korea